

CHECKLIST OF THE VASCULAR PLANTS OF GREENE COUNTY, PENNSYLVANIA

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ABSTRACT

Although Greene County, located in the southwest corner of Pennsylvania, has been botanized since the early 1800s, a checklist of its vascular flora has not previously been compiled. A search of herbaria augmented by targeted fieldwork has resulted in a list of 890 taxa of native and naturalized plants comprising 438 genera and 118 families. The five largest families, by number of species, were Asteraceae, Poaceae, Cyperaceae, Rosaceae, and Fabaceae. The six largest genera were *Carex*, *Solidago*, *Galium*, *Rubus*, *Polygonum*, and *Viola*.

RESUMEN

El Condado de Greene, se localiza en la esquina suroeste del estado de Pennsylvania. Este condado es considerado una de las áreas más diversas y de impacto en el estado, sin embargo hasta ahora no ha sido completada una lista de verificación. Esta lista de verificación contiene familias, géneros, y taxa específicos están ordenados alfabéticamente dentro de los grupos de plantas vasculares tales como Pteridófitas, Gimnospermas y Angiospermas. Esta lista incluye los nombres de especies nativas y naturalizadas conocidas que ocurren en el Condado de Greene. Un total de al menos 118 familias, 438 géneros, y 890 especies fueron encontradas. Las cinco familias más grandes, por el número de especies, fueron Asteraceae, Poaceae, Cyperaceae, Rosaceae, y Fabaceae. Los seis géneros más grandes, por el número de especies, fueron *Carex*, *Solidago*, *Galium*, *Rubus*, *Polygonum* y *Viola*.

INTRODUCTION

Even though Pennsylvania lacks checklists for most of its counties, the vascular flora known thus far is quite diverse; Rhoads and Klein (1993) reported 3318 taxa of vascular plants for the state, including 2076 native and 1242 introduced. Of the 67 counties in Pennsylvania approximately 24 have floras completed, however a number are unavailable to the public because they are unpublished theses and surveys. The exact number of genera and species in the flora of Greene County was not previously known as a checklist had never been compiled. However, Greene County is currently being seriously impacted by coal

mining, making documentation of the flora all the more urgent. This checklist will be needed when reclamation and revegetation decisions are made of the areas that have been mined for coal. Checklists contain baseline information that can be used to monitor changes in our environment and to help us make wise conservation decisions.

Site Description

Greene County, Pennsylvania is located in the southwestern corner of the state (Fig. 1). It is bordered by the counties of Washington to the north, Fayette to the east, Monongalia and Wetzel counties, West Virginia to the south and Marshall County, West Virginia to the west. The county was named for Nathaniel Greene on February 9, 1796; it contains approximately 371,000 acres. Greene County receives total annual precipitation of approximately 38 inches, of which 55 percent usually falls in April through September. Average seasonal snowfall is 31 inches. The last frost of the season is usually around May 18th and the first frost of the season approximately September 25th. The length of the growing season, from the last killing frost in spring to the first killing frost in autumn, is about 149 days (USDA 1983).

The soils of the county consist of three main series: Dormont-Culleoka association, Dormont-Culleoka-Newark association, and Glenford-Dormont-Library association.

The Dormont-Culleoka association consists of hills with benches and ridges that make up about 75 percent of Greene County. Dormont soils are found predominantly on hillsides and benches and commonly have slips on them. These soils are deep and moderately well drained. They consist of shale, siltstone, limestone and colluvium. The Culleoka soils are mostly on ridges and hilltops but some areas are on hillsides. They consist of limestone, sandstone, siltstone, and shale.

The Dormont-Culleoka-Newark association consists of hills and flood plains. Dormont and Culleoka soils are as described above. The Newark soils are on flood plains. These soils are deep and somewhat poorly drained. These areas were formed from an alluvium derived from limestone, sandstone, siltstone, and shale.

The Glenford-Dormont-Library association consists of terraces, hills, ridges and benches. Glenford soils are on terraces. These soils are deep and moderately well drained. These areas were formed in slackwater alluvium derived from calcareous shale and sandstone. Dormont soils are as described above. Library soils are mostly uplands. These soils are deep and somewhat poorly drained. These areas were formed in slackwater alluvium derived from siltstone, calcareous shale, and limestone (USDA 1983).

Greene County is part of the Kanawha section of the Appalachian Plateau Province. The Kanawha section consists in most places of rounded hills and



FIG. 1. Top. Counties of Pennsylvania. Adapted from Map 2, The Plants of Pennsylvania (Rhoads & Block 2000). Bottom. Townships of Greene County. Origin unknown.

ridges, products of the submature dissection of a once featured plain whose character is suggested by the few flat summit areas. The maximum elevation is about 1,600 feet. The entire Greene County drainage area is a tributary of the Mississippi River system, the Ohio River being the immediate master stream (USDA 1983).

History

Indians and fur traders were in Greene County long before the white settlers. In 1760 Pennsylvania and Maryland agreed to the Mason and Dixon Line as a boundary between the two colonies. Obstacles such as Indian attacks retarded the actual demarcation. The line was extended to its western limits in the autumn of 1784 and drawn northward in 1785, finally fixing the southern and

western boundaries of Washington County, which included Greene County. Washington County was apart of Virginia until Pennsylvania and Virginia finally agreed upon this boundary line. The first wave of frontier settlement came after the French and Indian War ended in 1763. From the outbreak of the Dunmore's war in 1774 to the end of the American Revolution in 1783 the Indians and early colonists were in conflict. Most of the settlement by colonists took place after the American Revolution. By 1790 the American Indians in Greene County were virtually extinct.

By 1796 the best lands were taken and there was sufficient population to warrant the formation of Greene County, separate from Washington County. As mentioned above, Greene County was named in February 9, 1796, in honor of General Nathanael Greene, one of George Washington's great generals during the American Revolution. The gradual opening of roads, improvement of the Monongahela River for navigation and construction of railroads were important in the development of the county. The first railroad to enter Greene County was the Waynesburg and Washington Railroad in 1877.

Agriculture was the mainstay of Greene County's economy from its earliest settlement. Most of the residents farmed or raised stock. The 1890 census indicate that almost 90 percent of the people lived on farms, most were engaged in agricultural pursuits, and most of the wealth was agricultural in nature. There were no large-scale commercial mines in Greene County in 1886, however, coal had been mined in the county for many years in dirt mines. In the early 1890s improved transportation brought outside investors and the beginning of large-scale coal mining. The gas and oil boom of 1894-1905 changed Greene County. Major oil and gas companies leased thousands of acres and drilled scores of wells attracting new people and outside capital. The 1900 census ranked the progress of manufacturing for the county near the bottom of all Pennsylvania counties. Up until the 1940s agriculture, coal mining and oil and gas production were the main industries in the county. During the 1950s agriculture became less important and coal mining has become dominant in the economy. In 1945 there were 2,860 farms in the county but by 1992 only 633 farms remained. The decline of agriculture may be partly due to the inevitable subsidence of the surface of land that accompanies to coal mining. Subsidence can cause a loss of ground water in wells and springs creating problems for the farmers and other landusers, as well as changing the vegetation. Subsidence and water loss for the lands and people of Greene County has been the subject of much controversy in recent years. Documentation such as what is contained in this report is a necessary precursor to land restoration needed in order to restore the land back to its original state (Smith 1996).

Major Collectors

Collecting in Greene County for the Carnegie Museum Herbarium began in the early 1800s and has continued to the present. Most of the collectors have been

members of the Botanical Society of Western Pennsylvania and the staff of the Section of Botany at Carnegie Museum.

Botanists who have made significant contributions to the knowledge of the Greene County flora are: F.H. Beer, F. Bell, W.E. Buker, R. Coxe, M.J. Haywood, L.K. Henry, B.L. Isaac, J.A. Isaac, O.E. Jennings, C.M. Morton, S.A. Thompson, and J.H. Nishida.

METHODS

The checklist was compiled by searching the herbaria of the Carnegie Museum of Natural History (CM) and the Morris Arboretum of the University of Pennsylvania (MOAR) for Greene county specimens. In addition, fieldwork was conducted targeting under-represented areas of the county. Most of the collections were made during the last two years however several specimens date back as early as 1895 and 1896. The majority of the specimens except for 28 samples, from which collection information was obtained from the Morris Arboretum, are deposited at the Carnegie Museum of Natural History (CM) Herbarium. Other herbaria that were examined for specimens include the Academy of Natural Sciences of Philadelphia and Kent State University. The flora of Rhoads and Block (2000) was the primary source for plant identification. For generic and species names, we have generally followed the Synthesis of North American Flora (Kartesz 1999). Authorities are abbreviated for the majority of taxa according to Brummitt and Powell (1992).

RESULTS AND DISCUSSION

This list includes the names of all native and naturalized species known to occur in Greene County. It includes a total of 118 families, 438 genera, and 890 species. The five families, with the largest number of species, are Asteraceae, Poaceae, Cyperaceae, Rosaceae, and Fabaceae. *Carex*, *Solidago*, *Galium*, *Rubus*, *Polygonum* and *Viola*, are the largest genera. There are approximately 179 non-native species that have been introduced mainly from Europe and Eurasia. This checklist recognizes 3 species of Lycophytes, 39 species of Pteridophytes, 7 species of Gymnosperms and 841 species of Angiosperms. Twenty-six species have global or state ranking.

Of the 26 plants that have global or state ranking only *Scutellaria saxatilis* has a global ranking of G3 or vulnerable status. The remaining 25 plants are either a G4 or G5 status, indicating an apparently secure or secure condition. The genus *Scutellaria*, a member of the mint family, is very distinctive and easily identified by the protuberance on the upper lip of the corolla. This species is a stoloniferous plant with leaves broadly lanceolate to triangular and has cordate leaves at the base. The leaves are coarsely crenate, 4-5 cm long, with a long petiole. The flowers are in panicles. Most of the collections are from semi-shaded areas in dry woods or, occasionally, in moist areas along streams. This species is

not common but is inconspicuous and may be overlooked. Its recovery potential is unknown but will be poor unless people search for its existence.

There are five taxa listed by the Pennsylvania Department of Agriculture (2004) as noxious weeds. It is therefore illegal to propagate, sell or transport the following taxa in the commonwealth: *Cirsium arvense* (Canadian thistle), *Rosa multiflora* (multiflora rose), *Cirsium vulgare* (bull or spear thistle), *Datura stramonium* (jimsonweed), and *Lythrum salicaria* (purple loosestrife). Other mentionable offenders to our native ecosystem listed by the Department of Conservation and Natural Resources (2000) are: *Alliaria petiolata* (garlic mustard), *Lonicera japonica* (Japanese honeysuckle), *Lonicera morrowi* (morrow's honeysuckle), *Celastrus orbiculatus* (oriental bittersweet), and *Elaeagnus umbellata* (autumn olive).

While this list is probably not all-inclusive, it is the most comprehensive list available.

Plant Communities

Based on our field observations and the classifications of Fike (1999), the study area contains the following nine major community types; terrestrial forests, palustrine forests, terrestrial woodlands, palustrine woodlands, terrestrial shrublands, palustrine shrublands, terrestrial herbaceous openings, herbaceous wetlands, and community complexes. In the discussion below additional divisions are made within these nine categories. In categories dominated by woody plants the division is based on the phenology of the dominant species. In herbaceous wetlands the division is between persistent and non-persistent vegetation. Community complex section represents a special situation rather than a parallel classification system. Overall species diversity is high, and many species occur in more than one community type.

Terrestrial forest.—The two subcategories of this plant community are conifer broadleaf terrestrial forests and broadleaf terrestrial forests.

The conifer broadleaf terrestrial forest is defined by communities of pitch pine-mixed oak forest, dry white pine (hemlock)-oak forest, hemlock (white pine)-northern hardwood forest, hemlock (white pine)-red oak-mixed hardwood forest, hemlock-tuliptree-birch forest, and hemlock-mesic hardwoods forest.

The pitch pine-mixed oak forest community generally occurs on acidic, sandy soils, often on ridgetops and dry southern exposures. Typical shrubs include *Kalmia latifolia* and *Gaylussacia baccata*. The herbaceous layer is sparse with *Pteridium aquilinum*, *Aralia nudicaulis*, *Gaultheria procumbens*, *Cypripedium acaule* and various graminoids.

The dry white pine (hemlock)-oak forest community occurs on fairly dry sites, often with portions of the forest floor covered by rocks, boulders and/or exposed bedrock. The canopy is open and tree growth can be suppressed. The dominant species are *Pinus strobus* or *Tsuga canadensis* and a mixture of dry-

site hardwoods, predominantly oaks. *Kalmia latifolia* is an important shrub with typically a sparse herbaceous layer present.

The hemlock (white pine)-northern hardwood forest community can be comprised by any of the three named components. The forests occur mostly on mesic sites, often north-facing, sometimes rocky and steep. *Rhododendron maximum* is usually abundant. The herbaceous layer is generally sparse with a rich bryophyte layer.

The hemlock (white pine)-red oak-mixed hardwood forest contains *Tsuga canadensis* and/or *Pinus strobus* with usually *Quercus rubra* and other hardwoods present. Shrubs include *Viburnum acerifolium*, *Rhododendron periclymenoides* and *Amelanchier* spp. Herbaceous species include *Maianthemum racemosum*, *Polygonatum biflorum*, *Gaultheria procumbens* and *Podophyllum peltatum*.

The hemlock-tuliptree-birch forest contains tuliptrees and a mix of more southern species. It is generally a lower slope or cove type. *Tsuga canadensis* usually contributes 25% or more of the canopy with *Liriodendron tulipifera* and *Betula* sp. as the characteristic hardwood species. Shrubs include *Hamelis virginiana*, *Rhododendron maximum* and others. The herbaceous layer is highly variable.

The hemlock-mesic hardwood forests are species-rich lower slope forests with a strong *Tsuga canadensis* component. Shrubs such as *Rhododendron maximum*, *Hamelis virginiana* and *Lindera benzoin* are common. The herbaceous diversity under the hardwood is diverse while under the dense hemlock the vegetation reflects a more northern flora.

The broadleaf terrestrial forest is defined by communities of dry oak-heath forest, dry oak-mixed hardwood forest, red oak-mixed hardwood forest, tuliptree-beech-maple forest, sugar maple-basswood forest, mixed mesophytic forest, red maple (terrestrial) forest, aspen/gray birch forest and black locust forest.

The dry oak-heath forest community is fairly broadly defined and usually occurs on xeric to moderately dry, acidic sites, often on shallow sandy soils. The most characteristic tree species is *Quercus montana* occurring with a mixture of other oak species. The shrub layer is dominated by ericaceous species. Because of the resistant oak leaf litter, the herbaceous layer is generally sparse.

The dry oak-mixed hardwood forest occurs on somewhat calcareous moderately dry soils. It is frequently found on south and southwest-facing slopes. Characteristic shrubs include *Cornus florida*, *Caprinus caroliniana* and *Amelanchier arborea*. The herbaceous species include *Maianthemum racemosum*, *Polygonatum biflorum*, *Asplenium platyneuron*, *Desmodium* spp., *Hieracium venosum*, *Aralia nudicaulis*, *Carex pennsylvanica*, *Carex communis* and *Lysimachia quadrifolia*.

The red oak-mixed hardwood forest is a broadly defined community occurring on mesic sites. *Quercus rubra* is dominant/codominant with various taxa of

Quercus spp., *Betula* spp., *Fagus grandifolia* among others. The shrubs include taxa of *Viburnum*, *Amelanchier*, *Kalmia latifolia*, *Capinus caroliniana* among others. The herbaceous layer is highly variable.

The tuliptree-beech-maple forest occur on fairly deep, slightly acidic soils, at a mid to lower-slope position. *Acer rubrum*, *Liriodendron tulipifera* and *Fagus grandifolia* are the most consistent species for this very mixed forest. Typical shrubs include *Viburnum*, *Capinus caroliniana*, *Cornus florida*, and *Ostrya virginiana*. The herberbaceous layer may be rich.

The sugar maple-basswood forest type occurs on a wide range of sites. Dominant tree species are *Acer saccharum* and *Tilia americana*. Shrubs include *Lindera benzoin*, *Hamamelis virginiana* and *Asimina triloba*. There is usually a rich vernal flora.

The mixed mesophytic forest is an extremely rich community type that occurs on deep soils at the base of slopes. Dominant tree species are *Liriodendron tulipifera*, *Acer saccharum*, *Fagus grandifolia*, *Tilia americana* and *Magnolia acuminata*. The herbaceous layer is very rich and includes *Trillium* sp., *Dicentra* sp., *Tiarella cordifolia*, *Hepatica nobilis*, *Sanguinaria canadensis*, *Botrychium virginianum* and *Mitella diphylla*.

The red maple (terrestrial) forest is an early to mid successional type that is becoming common in Pennsylvania. *Acer rubrum* is dominant, but more information needed for the species composition of the community type.

The aspen/gray birch forest is frequently mixed, but can contain nearly pure stands of *Betula* sp. or *Populus* sp. The forest type is commonly found on former agricultural lands or where forestry practices maintain an early successional stage.

The last type of terrestrial forest is the black locust forest. This community type occurs on highly disturbed sites. *Robinia pseudoacacia* is the dominant species with *Betula lenta* being the codominant species. There is usually a dense graminoid understory with many exotic species common.

Palustrine Forest.—The one subcategory of this plant community has broad-leaf palustrine forest, defined by communities of bottomland oak-hardwood palustrine forest, red maple-black-gum palustrine forest, sycamore-(river birch)-box-elder floodplain forest, silver maple floodplain forest and red maple-elm-willow floodplain swamp.

The bottomland oak-hardwood palustrine forest are characterized by the dominance of *Quercus palustris* and/or *Q. bicolor*. Shrubs include *Lindera benzoin*, *Vaccinium corymbosum*, *Dirca palustris* and *Viburnum* sp. The understory includes *Impatiens* sp., *Thelypteris palustris*, *Polygonum* sp. and *Agrimonia parviflora*.

The red maple-black-gum palustrine forest is dominated by *Acer rubrum* and/or *Nyssa sylvatica*. The shrub layer is variable and may include *Vaccinium*

corymbosum, *Ilex verticillata*, *Alnus* spp. and *Cornus* spp. The herbaceous layer includes such taxa as *Viola* spp., *Osmunda cinnamomea*, *Carex* spp. and *Onoclea sensibilis*.

The sycamore-(river birch)-box-elder floodplain forest occurs along the floodplains of the larger or mid-size river systems. Dominant tree species are *Platanus occidentalis* and *Acer negundo* with shrubs consisting of *Salix* spp., *Cornus* spp. *Vitis riparia*, *Lindera benzoin* and *Toxicodendron radicans* along with several invasive exotics. The herbs include *Impatiens* spp., *Pilea pumila*, and *Urtica dioica*.

In the silver maple floodplain forest community the forest occur along large rivers with a well-developed floodplain. Various *Acer* spp. and *Ulmus* spp. are dominant with shrubs including *Cornus* spp., *Lindera benzoin* and *Toxicodendron radicans* along with several invasive exotics. The herbaceous layer includes *Impatiens* spp., *Pilea pumila*, and *Alliaria petiolata*.

The last community of palustrine forests, the red maple-elm-willow floodplain swamp lands, is primarily associated with lands surrounding the major river systems that are subject to periodic flooding. Besides the above mentioned taxa of red maple, elm and willow, *Carya cordiformis*, *Cornus amomum*, *Lindera benzoin*, *Vitis riparia*, *Onoclea sensibilis* and *Polygonum* spp. are also found.

Terrestrial Woodlands.—The three subcategories of this plant community are coniferous terrestrial woodlands, conifer-broadleaf terrestrial woodlands and broadleaf terrestrial woodlands. The coniferous terrestrial woodlands consist of communities of pitch pine-heath woodland and pitch pine-scrub oak woodland.

The pitch pine-heath woodland is a community that occurs on rocky ridgetops typically with sandy soils. Soils are usually acidic and dry and the associated tree species are drought-stressed and small in stature. Hardwoods if present only contribute less than 25% of the tree layer. Various shrubs, mostly ericads, form a low shrub layer. Herbaceous species include *Pteridium aquilinum*, *Carex* spp., *Lespedeza* spp. and lichens.

The pitch pine-scrub oak woodlands are very similar to the pitch pine-heath community except for the understory species which consist of *Pteridium aquilinum*, *Carex* spp., various grasses and *Aralia nudicaulis*.

The conifer-broadleaf terrestrial woodlands community is defined by pitch pine-mixed hardwoods woodlands. Soil, drought tolerance, shrub layer, and percent hardwoods are similar to the pitch pine-heath woodland type. Some of the associated taxa are slightly different.

The broadleaf terrestrial woodlands are defined by communities of dry oak-heath woodland, birch (black-gum) rocky slope woodland and yellow oak-redbud woodland.

The dry oak-heath woodland occurs on dry, acidic soils. Dominant tree species are *Quercus* spp., *Nyssa sylvatica*, *Sassafras albidum*, *Betula* spp. and *Acer*

rubrum with pines species contributing less than 25%. The shrub layer is variable composed of either low shrubs like *Vaccinium* spp. or there may be an additional layer of taller shrubs like *Kalmia latifolia*. Herbaceous layer contains taxa like *Pteridium aquilinum*, *Carex* spp., *Oryzopsis* spp., and *Aralia nudicaulis*.

The birch (black-gum) rock slope woodland occurs most commonly on rocky slopes although it may occur on benches, ridgetops or boulderfields. Birch is usually present with either birch or black-gum dominant. Shrubs such as *Kalmia latifolia*, *Viburnum acerifolium* and *Hamamelis virginiana* are usually present. The herbaceous layer is commonly sparse with an often rich bryophyte and lichen assemblage.

Palustrine woodlands.—The one subcategory of this plant community, broadleaf palustrine woodlands, is defined by red maple-sedge palustrine woodlands and red maple-mixed shrub palustrine woodlands.

The red maple-sedge palustrine woodlands is a type which occur in disturbed areas frequented by beavers. *Acer rubrum* is often the only tree species, however others may be scattered. The shrub layer is variable and may be dense in upland areas to nearly absent in wetter areas. The herbaceous layer is dominated by sedges.

The red maple-mixed shrub palustrine woodlands occurs on mineral soil with a thin layer of muck. *Acer rubrum* dominates the tree layer with *Cornus amomum*, *Ilex verticillata*, *Lindera benzoin*, *Alnus serrulata*, and *Salix sericea* as representative shrubs. The herbaceous layer is dominated by ferns.

Terrestrial shrublands.—The two subcategories of this plant community are conifer-broadleaf terrestrial shrublands and broadleaf terrestrial shrublands.

The conifer-broadleaf terrestrial shrublands are defined by red-cedar-redbud shrubland. The red-cedar-redbud shrubland occurs on calcareous soils in areas where the conditions are dry enough to prevent forest development. *Juniperus virginiana* and *Cercis canadensis* are both characteristic taxa of these sites. The herbaceous layer contains various grass species along with *Lithospermum latifolium* and *Aquilegia canadensis*.

The broadleaf terrestrial shrublands are defined by low heath shrubland and scrub oak shrubland. The low heath shrubland are found on either sandy soil or on thin soil over bedrock. Typically found in exposed areas such as ridgetops where frost or drought conditions limit the establishment of trees and tall shrubs. Dominant species are *Vaccinium* spp., and/or *Gaylussacia baccata*. There is an herbaceous and creeping shrub layer with a moss and lichen cover that may be considerable.

The scrub oak shrublands have soil conditions similar to the low heath shrublands, however the former are usually situated in areas where frequent or recent disturbance has removed the tree layer. Scrub oak is the dominant species, occurring along with low growing shrubs such as *Vaccinium* spp., *Gault-*

heria procumbens, and *Gaylussacia baccata*. The herbaceous layer contains mostly various grasses.

Palustrine shrublands.—The one subcategory of this plant community broad-leaf palustrine shrublands, is defined by buttonbush wetland, alder-ninebark wetland, alder-sphagnum wetland, highbush blueberry-meadow-sweet wetland and black willow scrub/shrub wetland.

The buttonbush wetlands are characterized by prolonged flooding. Other shrubs besides *Cephalanthus occidentalis* would include *Cornus* spp., *Salix* spp., and *Sambucus canadensis*.

The alder-ninebark wetlands are shrub swamps dominated by *Alnus* spp. and *Physocarpus opulifolius*. They occur at the upland edge of marshes, at the wetter edge of red maple wetlands, in small upland depressions, or at the base of slopes. The soil generally contains minerals with a thin organic layer, although it may occur on shallow peat. The species composition is variable, and dominance may be shared by various shrubs species. The herbaceous layer contains *Thelypteris palustris*, *Typha latifolia*, and *Galium* spp.

The alder-sphagnum wetlands are dominated by *Alnus serrulata* and/or *A. incana* with a sphagnum layer. The substrate may be peat or a mineral layer with organic matter. Shrubs associated with this community are *Vaccinium corymbosum*, *Ilex verticillata*, and *Cornus racemosa* along with a variety of ferns and sedges.

The highbush blueberry-meadow-sweet wetland is dominated by *Vaccinium corymbosum*, *Spiraea latifolia* or *S. alba* with associates of *Amelanchier* spp. and *Sambucus canadensis*. The herbaceous layer is generally dominated by graminoids and ferns with the sphagnum either forms a continuous layer or forms a hummock.

The black willow scrub/shrub wetlands are types most typical of stream and riverbanks. *Salix nigra* dominates with *Alnus* spp., *Cornus* ssp. and *Salix* spp. also present. The herbaceous layer is variable and includes *Polygonum* spp., *Bidens* spp. along with *Phalaris arundinacea*.

Terrestrial herbaceous openings.—This type is defined by little bluestem-Pennsylvania sedge openings and calcareous opening/cliff lands.

The little bluestem-Pennsylvania sedge opening are grasslands that are on dry, acidic sites which discourage woody species growth. Mosses and lichens are abundant on some sites.

The calcareous opening/cliff lands are on calcareous cliffs, outcrops and rocky slopes. Species composition varies with the amount of moisture, shade and exposure. Woody species may occur at the margins or scattered and would include *Juniperus virginiana*, *Rhus aromatica*, *Toxicodendron radicans*, and *Cercis canadensis* to name a few. The herbaceous layer would include such species as *Aquilegia canadensis*, *Dodecatheon meadia*, and *Aster* spp.

Herbaceous wetlands.—The two subcategories are persistent emergent wetlands and non-persistent emergent wetlands. The persistent emergent wetlands are defined by the following fourteen types: bluejoint—reed canary grass marsh, cat-tail marsh, tussock sedge marsh, mixed forb marsh, herbaceous vernal pond, wet meadow, bulrush marsh, prairie sedge—spotted joe-pye-weed marsh, golden saxifrage—sedge rich seep, skunk cabbage—golden saxifrage forest seep, golden saxifrage—Pennsylvania bitter-cress spring run, water-willow (*Justicia americana*) smart weed riverbed community, riverside ice scour community, and big bluestem—Indian grass river grassland.

These wetlands maybe flooded for most of the year as are the marsh communities, or they are subject to seasonal flooding and/or ice scour. The substrate is usually peat, muck, mineral soil, sand deposits or rock; however, clay or clay-loam soils are found in the prairie sedge-spotted joe-pye-weed marsh. The water can be acidic, alkaline, calcareous or spring-like in nature. Although most of the communities are dominated by a herbaceous layer, shrubs and small trees may be present. Some communities are dominated by a single genus and/or species such as the bulrush marsh (*Schoenoplectus* spp.), the cat-tail marsh (*Typha* spp.), and the tussock sedge march (*Carex stricta*). Some areas are dominated by a general type of plant, such as the mixed forb marsh, where broad-leaved plants occur, or the wet meadow, where graminoids are typical. In the herbaceous vernal pond community the species composition varies between sites, as well as annually and seasonally. These habitats, especially the herbaceous vernal pond communities, are critical breeding habitat for amphibians and supply important habitat resources for many species of birds, mammals, reptiles, amphibians and invertebrates. The most common taxa include *Carex* spp., *Scirpus* spp. and *Typha* spp. Invasive species, such as *Lythrum salicaria* are found in some of the communities. The non-persistent emergent wetlands are defined by spatterdock—water lily wetland. These areas contain a combination of emergent and floating-leafed vegetation dominates this community where the substrate is seldom dry. The substrate is mineral soil, muck, or peat. Dominate species are *Nymphaea odorata* and *Nuphar lutea*, along with other aquatic vegetation.

Community complexes.—The one subcategory is the river bed—bank—floodplain complex. Community types that characterize this complex are sycamore-(river birch)-box elder floodplain forest, silver maple floodplain forest, red maple-elm-willow floodplain swamp, river birch-sycamore floodplain scrub, black willow scrub/shrub wetland, riverside ice scour community, big bluestem-indian grass river grassland, and water-willow-smartweed riverbed community. All of these communities have been described except for the river birch-sycamore flood plain scrub that does not occur in Greene County.

ANNOTATED CHECKLIST OF THE SPECIES OF
GREENE COUNTY, PENNSYLVANIA

Taxa are listed according to the following format: taxon name, author(s), (year) collector and number; **global:state ranking** [Synonyms] and * = exotic with non-native source. We follow the state (S) and global (G) ranking systems developed by The Nature Conservancy (1996 version). The global numbers are designated from 1 (critically imperiled) to 5 (secure). Other notations include SH = historical occurrence, and SR = reported without persuasive documentation. Synonyms have been included for recognized genera that are not yet in common usage in the state or regional manuals. In cases where there was more than one specimen present in the collection, the use of current known collectors for the western Pennsylvania region was used.

Families, genera, specific and infraspecific taxa are arranged alphabetically within vascular plant groups Lycophytes, Pteridophytes, Gymnosperms, and Angiosperms.

LYCOPHYTES

LYCOPODIACEAE

- Huperzia lucidula* (Michx.) Trevis., (1971) Buker, W.E.; Leightner, L.D.
Lycopodium digitatum Dill. ex. A. Braun, (1995) Isaac, B.L.; Isaac, J.A. 7543
Lycopodium tristachyum Purch., (1951) Henry, L.K.; Beer, F.H.

PTERIDOPHYTES

ASPLENIACEAE

- Asplenium pinnatifidum* Nutt., (1996) Grund, S.P. 1444; **G4-S3**
Asplenium platyneuron (L.) Britton, Sterns & Poggenb., (1995) Isaac, J.A.; Isaac, B.L. 7097
Asplenium rhizophyllum L., (2003) Isaac, J.A.; Isaac, B.L. 15860
Asplenium trichomanes L., (1907) Jennings, O.E.

BLECHNACEAE

- Woodwardia areolata* (L.) T. Moore, (1971) Buker, W.E.; **G5-S2**

DENNSTAETIDIACEAE

- Dennstaedtia punctilobula* (Michx.) T. Moore, (1993) Haywood, M.J. 251
Pteridium aquilinum (L.) Kuhn var. *latiusculum* (Desv.) Underw. ex A. Heller, (2003) Isaac, J.; Cox, R. 17128

DRYOPTERIDACEAE

- Athyrium filix-femina* (L.) Roth var. *angustum* (Willd.) Clausen, (1951) Henry, L.K.; Beer, F.H.
Cystopteris bulbifera (L.) Bernh., (2003) Isaac, J.A. 16363
Cystopteris fragilis (L.) Bernh., (1996) Haywood, M.J. 651
Cystopteris protrusa (Weath.) Blasdell, (1994) Isaac, J.A. 6007
Cystopteris tenuis (Michx.) Desv., (2002) Isaac, J.A.; Takacs, M. 14492
Deparia acrostichoides (Sw.) M. Kato, (1994) Isaac, J.A. 6006
Diplazium pycnocarpon (Spreng.) M. Broun, (2002) Isaac, J.A. & Takacs, M. 14401
Dryopteris carthusiana (Vill.) H.P. Fuchs, (1995) Isaac, B.L.; Isaac, J.A. 7534
Dryopteris cristata (L.) Gray, Wherry & Bell
Dryopteris goldiana (Hook. ex Goldie) Gray, (1996) Isaac, B.L.; Isaac, J.A. 8878
Dryopteris intermedia (Muhl. ex Willd.) A. Gray, (1996) Isaac, B.L.; Isaac, J.A. 8857
Dryopteris marginalis (L.) A. Gray, (1996) Isaac, B.L.; Isaac, J.A. 8892
Onoclea sensibilis L., (1995) Isaac, B.L.; Isaac, J.A. 7132
Polystichum acrostichoides (Michx.) Schott, (1996) Isaac, B.L.; Isaac, J.A. 8877
Woodsia obtusa (Spreng.) Torr., (1951) Henry, L.K.; Buker, W.E.

EQUISETACEAE

- Equisetum arvense* L., (2003) Haywood, M.J. 581
Equisetum hyemale L., (2003) Isaac, J.A.; Isaac, B.L. 15857

OPHIOGLOSSACEAE

- Botrychium dissectum* Spreng., (1996) Haywood, M.J. 407
Botrychium matricariifolium (A. Braun ex Dowell) A. Braun ex Koch, (2003) Isaac, J.A. 16044
Botrychium oneidense (Gilbert) House, (1998) Grund, S.P. 2024
Botrychium simplex E. Hitchc., (1996) Isaac, B.L.; Isaac, J.A. 8910
Botrychium virginianum (L.) Sw., (1996) Isaac, B.L.; Isaac, J.A. 8875
Ophioglossum vulgatum L., (2003) Isaac, J.A.; Cox, R.; Ernst, S. 15894; **G5 S3**

OSMUNDACEAE

- Osmunda cinnamomea* L., Myers
Osmunda claytoniana L., (1996) Isaac, B.L.; Isaac, J.A. 8852

POLYPODIACEAE

- Polypodium appalachianum* Haufler & Windham, (1907) Jennings, O.E.
Polypodium virginianum L., (1995) Isaac, B.L.; Isaac, J.A. 7165

PTERIDACEAE

- Adiantum pedatum* L., (2003) Isaac, J.A. 16005
Pellaea glabella Mett. ex Kuhn, (1950) Henry, L.K.; Buker, W.E.

THELYPTERIDACEAE

- Phegopteris hexagonoptera* (Michx.) Fée, (2003) Isaac, J.A.; Cox, R. 16278
Thelypteris noveboracensis (L.) Nieuwl., (2004) Isaac, J.A. 17619
Thelypteris palustris Schott var. *pubescens* (Lawson) Fern., (1993) Haywood, M.J. 264

GYMNOSPERMS**CUPRESSACEAE**

- Juniperus virginiana* L., (1950) Henry, L.K.; Buker, W.E.

PINACEAE

- **Picea abies* (L.) Karst., (1922) Jennings, O.E.; Europe
Pinus rigida P.Mill., (1921) Jennings, O.E.; Jennings, G.K.; et al.
Pinus strobus L., (1952) Henry, L.K.; Buker, W.E.

- Pinus virginiana* P.Mill., (1955) Henry, L.K.; Buker, W.E.

- Tsuga canadensis* (L.) Carr., (1985) Thompson, S.A.; Nichida, J.H.; Macdonald, M. 2255

TAXACEAE

- Taxus canadensis* Marsh., (2004) Isaac, J.A. 17307

ANGIOSPERMS**ACANTHACEAE**

- Justicia americana* (L.) Vahl, (1995) Isaac, B.L.; Isaac, J.A. 7507
Ruellia strepens L., (1942) Davis, H.A.; Davis, T. 5405; **G4G5:S2**

ACERACEAE

- Acer negundo* L., (2003) Isaac, J.A.; Isaac, B.L.; Morton, C.M. 15795
Acer nigrum Michx. f., (2003) Isaac, J.A. 16167
Acer rubrum L., (1993) Haywood, M.J. 294
Acer saccharinum L., (2003) Isaac, J.A. 16029
Acer saccharum Marsh., (2003) Isaac, J.A.; Isaac, B.L.; Morton, C.M. 15817
Acer spicatum Lam., (1969) Buker, W.E.

ACORACEAE

- **Acorus calamus* L., (2003) Isaac, J.A. 16393
 Europe

ALISMATACEAE

- Alisma subcordatum* Raf., (1950) Henry, L.K.; Beer, F.H.
Sagittaria latifolia Willd., (1984) Thompson, S.A.; Nishida, J.H.; Bier, C.W. 1971

AMARANTHACEAE

- Amaranthus hybridus* L., Bell 641

ANACARDIACEAE

- Rhus copallina* L. var. *copplina*, (1907) Jennings, O.E.
Rhus copallina L. var. *latifolia* Engl., (1951) Henry, L.K.; Beer, F.H.

- Rhus glabra* L., (2003) Isaac, J.A. 16404

- Rhus typhina* L., (2003) Isaac, J.A. 16180

- Toxicodendron radicans* (L.) Kuntze, (1995) Isaac, B.L.; Isaac, J.A. 7515

ANNONACEAE

- Asimina triloba* (L.) Dunal, (2003) Isaac, J.A.; Isaac, B.L. 15833

APIACEAE

- Angelica venenosa* (Greenway) Fern., (1951) Henry, L.K.; Beer, F.H.

**Chaerophyllum procumbens* (L.) Crantz, (2003) Isaac, J.A. 15879; Europe

Cicuta maculata L., (2003) Isaac, J.A. 16322

**Conium maculatum* L., (2003) Isaac, J.A. 16179; Europe

Cryptotaenia canadensis (L.) DC., (2003) Isaac, J.A. 16131

**Daucus carota* L., (1993) Haywood, M.J. 305; Eurasia

Erigenia bulbosa (Michx.) Nutt., (2004) Isaac, J.A. 17304; **G5 S2**

Heracleum maximum Bartr., (1992) Haywood, M.J. 57

Osmorhiza claytonii (Michx.) C.B. Clarke, (1995) Isaac, B.L.; Isaac, J.A. 7532

**Osmorhiza longistylis* (Torr.) DC., (1993) Haywood, M.J. 253; Eurasia

**Pastinaca sativa* L., (2003) Isaac, J.A. 16168; Eurasia

Sanicula canadensis L., (1998) Grund, S.P. 2057

Sanicula odorata (Raf.) K.M. Pryer & L.R. Phillippe, (2003) Isaac, J.A. 15991

Sanicula trifoliata Bickn., (1953) Buker, W.E.

Taenidia integerrima (L.) Drude, (2003) Isaac, J. 17134

Thaspium barbinode (Michx.) Nutt., (2003) Isaac, J.A. 16111

Thaspium trifoliatum (L.) Gray, (1996) Haywood, M.J. 436

**Torilis japonica* (Houtt.) DC., (2003) Isaac, J.A. 16627; Eurasia

Zizia aurea (L.) W.D.J. Koch, (1993) Haywood, M.J. 214

APOCYNACEAE

Apocynum androsaemifolium L., (1952) Henry, L.K.; Beer, F.H.

Apocynum cannabinum L., (2003) Isaac, J.A. 16406

**Vinca minor* L., (1993) Haywood, M.J. 107; Europe

AQUIFOLIACEAE

Ilex montana Torr. & Gray ex Gray, (1936) Bell, F.H.

Ilex verticillata (L.) Gray, (1921) Dickey, S.S.

ARACEAE

Arisaema dracontium (L.) Schott, (2003) Isaac, J.A.; Cox, R. 16287

Arisaema triphyllum (L.) Schott ssp. *pusillum* (Peck) Huttleston, (1951) Henry, L.K.; Beer, F.H.

Arisaema triphyllum (L.) Schott ssp. *triphyllum*, (1996) Isaac, B.L.; Isaac, J.A. 8886

Symplocarpus foetidus (L.) Salisb. ex Nutt., (2003) Isaac, J.A.; Isaac, B.L. 15851

ARALIACEAE

Aralia nudicaulis L., (2004) Isaac, J.A. 17625

Aralia racemosa L., (1996) Haywood, M.J. 644

Aralia spinosa L., Bell 304

Panax quinquefolius L., (2003) Isaac, J.A. 16581

ARISTOLOCHIACEAE

Aristolochia macrophylla Lam., (1974) Buker, W.E.

Aristolochia serpentaria L., (2003) Isaac, J.A. 16045

Asarum canadense L., (1996) Isaac, B.L.; Isaac, J.A. 8891

ASCLEPIADACEAE

Asclepias exaltata L., (2003) Isaac, J.A. 16205

Asclepias incarnata L., (1996) Haywood, M.J. 645

Asclepias quadrifolia Jacq., (1996) Isaac, B.L.; Isaac, J.A. 8858

Asclepias syriaca L., (1995) Isaac, B.L.; Isaac, J.A. 7502

Asclepias tuberosa L., (1993) Haywood, M.J. 116

ASTERACEAE

**Achillea millefolium* L., (2003) Isaac, B.L.; Isaac, J.A. 16164; Eurasia

Ageratina altissima (L.) King & H.E. Robins., (1993) Haywood, M.J. 156

Ambrosia artemisiifolia L., (2003) Isaac, J.A. 17140

Ambrosia trifida L., (2003) Isaac, J.A. 17139

Antennaria howellii Greene ssp. *neodioica* (Greene) Bayer, (2003) Cox, R.; Bradburn, M.

Antennaria neglecta Greene, (1994) Haywood, M.J. 467

Antennaria parlinii Fern., (1995) Isaac, J.A.; Isaac, B.L. 7168

Antennaria plantaginifolia (L.) Richards., (1995) Isaac, B.L.; Isaac, J.A. 7114

Antennaria solitaria Rydb., (2002) Isaac, J.A.; Takacs, M. 14413; **G5 S1**

**Anthemis arvensis* L., (2003) Isaac, J.A. 16601; Europe

**Anthemis cotula* L., (1971) Buker, W.E.; Europe

**Arctium lappa* L., (1993) Haywood, M.J. 167; Eurasia

**Arctium minus* Bernh., (1984) Thompson, S.A.; Nishida, J.H.; Bier, C.W. 1974; Eurasia

Bidens bipinnata L., (1921) Jennings, O.E.

Bidens cernua L., (1993) Haywood, M.J. 181

Bidens frondosa L., (1984) Thompson, S.A.; Nishida, J.H.; Bier, C.W. 1951

- Bidens tripartita* L., (1949) Jennings, O.E.
 **Centaurea jacea* L., (1993) Haywood, M.J. 93; Europe
 **Cichorium intybus* L., (1995) Isaac, B.L.; Isaac, J.A. 7487; Europe
 **Cirsium altissimum* (L.) Spreng., (1951) Henry, L.K.; Beer, F.H.; Europe
 **Cirsium arvense* (L.) Scop., (1995) Isaac, B.L.; Isaac, J.A. 7493; Eurasia
Cirsium muticum Michx., (1993) Haywood, M.J. 92
Cirsium pumilum (Nutt.) Spreng., (1998) Grund, S.P. 2039
 **Cirsium vulgare* (Savi) Ten., (2003) Isaac, J.A. 16630; Eurasia
Conoclinium coelestinum (L.) DC., (1991) Isaac, J.A. 3671, **G5 S3**
Coryza canadensis (L.) Cronq., (1993) Haywood, M.J. 168
Doellingeria infirma (Michx.) Greene, (1951) Henry, L.K.; Beer, F.H.; [*Aster infirmus* Michx.]
Eclipta prostrata (L.) L., (1974) Buker, W.E.
Erechtites hieracifolia (L.) Raf. ex DC., (2004) Isaac, J.A. 18497
Erigeron annuus (L.) Pers., (2003) Isaac, J.A. 16380
Erigeron philadelphicus L., (1996) Isaac, B.L.; Isaac, J.A. 8889
Erigeron pulchellus Michx., (1995) Isaac, B.L.; Isaac, J.A. 7163
Erigeron strigosus Muhl. ex Willd., (1993) Haywood, M.J. 125
Eupatorium altissimum L., (1974) Buker, W.E.
Eupatorium fistulosum Barratt, (1993) Haywood, M.J. 124
Eupatorium maculatum L., (1951) Henry, L.K.; Beer, F.H.
Eupatorium perfoliatum L., (1993) Haywood, M.J. 153
Eupatorium purpureum L., (2003) Isaac, J.A. 16576
Eupatorium sessilifolium L., (2003) Isaac, J.A. 17137
Eurybia divaricata (L.) Nesom, (1998) Grund, S.P. 2044, [*Aster divaricatus* L.]
Eurybia schreberi (Nees) Nees, (1993) Haywood, M.J. 198; [*Aster schreberi* Nees]
Euthamia graminifolia (L.) Greene, (1949) Jennings, O.E.
 **Galinsoga quadriradiata* Cav., (2003) Isaac, J.A. 16310; Central & South America
Hasteola suaveolens (L.) Pojark., (2004) Isaac, J.A. 18568
Helenium autumnale L., (1993) Haywood, M.J. 152
Helianthus decapetalus L., (1993) Haywood, M.J. 143
Helianthus divaricatus L., (1907) Jennings, O.E.
Helianthus microcephalus Torr. & Gray, (2003) Isaac, J.; Haywood, M.J.; Coxe, R.; Bradburn, M. 17228, **G5 S3**
Helianthus strumosus L., (1940) Jennings, O.E.
Helianthus tuberosus L., (1993) Haywood, M.J. 148
Heliopsis helianthoides (L.) Sweet., (1993) Haywood, M.J. 145
 **Hieracium caespitosum* Dumort., (2003) Isaac, J.A. 16047; Europe
Hieracium gronovii L., (1976) Buker, W.E.
 **Hieracium pilosella* L., (1993) Haywood, M.J. 94; Europe
Hieracium scabrum Michx., (1974) Buker, W.E.
 **Hieracium venosum* L., (1993) Haywood, M.J. 131; Eurasia
 **Hypochaeris radicata* L., (1993) Haywood, M.J. 163; Eurasia
 **Lactuca biennis* (Moench) Fern., (1969) Buker, W.E.; Eurasia
Lactuca canadensis L., (1993) Haywood, M.J. 149
Lactuca floridana (L.) Gaertn., (1993) Haywood, M.J. 162
 **Lactuca saligna* L., (1971) Buker, W.E.; Europe
 **Lactuca serriola* L., (2003) Isaac, J.A. 16619; Europe
 **Lapsana communis* L., (2004) Isaac, J.A. 17525; Europe
 **Leucanthemum vulgare* Lam., (2003) Isaac, J.A. 16049; Exotic
Matricaria discoidea DC., (1995) Isaac, J.A.; Isaac, B.L. 7152
Packera aurea (L.) A.&D. Löve, (1996) Isaac, B.L.; Isaac, J.A. 8906; [*Senecio aureus* L.]
Packera glabella (Poir.) C. Jeffrey, (2003) Isaac, J.A. 16035; [*Senecio glabellus* Poir]
Packera obovata (Muhl. Ex Willd.) W.A. Weber & A. Löve, (1995) Isaac, B.L.; Isaac, J.A. 7173; [*Senecio obovatus* Muhl. Ex Willd.]
Polymnia canadensis L., (2003) Isaac, J.; Coxe, R.; Bradburn, M. 17217
Prenanthes altissima L., (1969) Buker, W.E.
Prenanthes crepidinea Michx., (2003) Isaac, B.L.; Isaac, J.A. 15861
Pseudognaphalium obtusifolium (L.) Hilliard & Burt., (1954) Henry, L.K.; Buker, W.E.
Rudbeckia hirta L. var. *pulcherrima* Farw., (1995) Isaac, B.L.; Isaac, J.A. 7526

- Rudbeckia laciniata* L., (2003) Isaac, J. 17143
Sericocarpus asteroides (L.) B.S.P., (1951) Henry, L.K.; Beer, F.H.
Silphium asteriscus L., (1958) Buker, W.E.
Silphium trifoliatum L. var. *trifoliatum*, (2003) Isaac, J. 16633
Smallanthus uvedalius (L.) Mackenzie ex. Small, (2003) Isaac, J.A.; Cox, R. 16289; **G4G5 SR** [*Polymnia uvedalia* L.]
Solidago altissima L., (1991) Isaac, J.A. 3676
Solidago bicolor L., (2004) Isaac, J.A. 18522
Solidago caesia L., (1969) Buker, W.E.
Solidago curtisii Torr. & A. Gray, (1984) Thompson, S.A.; Nishida, J.H. 2010; **G4G5 S1**
Solidago flexicaulis L., (1993) Haywood, M.J. 397
Solidago gigantea Aiton, (1949) Jennings, O.E.
Solidago juncea Aiton, (1993) Haywood, M.J. 130
Solidago nemoralis Aiton, (2004) Isaac, J.A. 18521
Solidago rugosa P. Mill. ssp. *rugosa* var. *rugosa*, (1950) Henry, L.K.; Buker, W.E.
Solidago squarrosa Nutt., (1954) Henry, L.K.; Buker, W.E.
Solidago ulmifolia Muhl. ex Willd., (1992) Haywood, M.J. 406
**Sonchus asper* (L.) Hill, (2003) Isaac, J.A. 16124; Europe
Symphotrichum cordifolium (L.) Nesom, (1984) Thompson, S.A.; Nishida, J.H. 2060; [*Aster cordifolius* L.]
Symphotrichum lanceolatum (Willd.) Nesom ssp. *lanceolatum* var. *lanceolatum*, (1954) Henry, L.K.; Buker, W.E.; [*Aster lanceolatus* Willd. ssp. *lanceolatus* var. *lanceolatus*]
Symphotrichum lateriflorum (L.) A. & D. Löve var. *lateriflorum*, (2003) Isaac, J.A.; Haywood, M.J.; Cox, R.; Bradburn, M. 17231; [*Aster lateriflorus* (L.) Britton.]
Symphotrichum lowrieianum (Porter) Nesom [*Aster lowrieianus* Porter], (1984) Thompson, S.A.; Nishida, J.H. 2060
Symphotrichum novae-angliae (L.) Nesom, (1993) Haywood, M.J. 203; [*Aster novae-angliae* L.]
Symphotrichum pilosum (Willd.) Nesom, (1984) Thompson, S.A.; Nishida, J.H. 2024; [*Aster pilosus* Willd.]
Symphotrichum prenanthoides (Muhl. ex Willd.) Nesom, (1993) Haywood, M.J. 397; [*Aster prenanthoides* Muhl. ex Willd.]
Symphotrichum puniceum (L.) A. & D. Löve, (1984) Thompson, S.A.; Nishida, J.H. 2064; [*Aster puniceus* L.]
Symphotrichum shortii (Lindl.) Nesom, (1995) Grund, S.P. 1419; [*Aster shortii* Lindl.]
**Taraxacum laevigatum* (Willd.) DC., (1925) Wood, S.; Eurasia
**Taraxacum officinale* G.H. Weber ex Wiggers, (1992) Haywood, M.J. 21; Eurasia
**Tussilago farfara* L., (1996) Haywood, M.J. 412; Eurasia
Verbesina alternifolia (L.) Britt. ex Kearney, (1993) Haywood, M.J. 132
Vernonia gigantea (Walt.) Trel., (1993) Haywood, M.J. 113
**Xanthium strumarium* L. var. *canadense* (P. Mill.) Torr. & A. Gray, (1957) Henry, L.K.; Beer, F.H.; Europe
**Xanthium strumarium* L. var. *glabratum* (DC.) Cronq., (1921) Jennings, O.E.; et al.; Europe
- BALSAMINACEAE**
Impatiens capensis Meerb., (2003) Isaac, J.A. 16375
Impatiens pallida Nutt., (2003) Isaac, J.A. 16374
- BERBERIDACEAE**
Berberis thunbergii DC., (2003) Isaac, J.A.; Isaac, B.L. 15849
Caulophyllum thalictroides (L.) Michx., (1996) Isaac, B.L.; Isaac, J.A. 8894
Jeffersonia diphylla (L.) Pers., (2003) Isaac, J.A. 15862
Podophyllum peltatum L., (2003) Isaac, J.A. 16415
- BETULACEAE**
Alnus serrulata (Aiton) Willd., Donley 153
Betula alleghaniensis Britt., (1974) Buker, W.E.
Betula nigra L., (2003) Cox, R.
Carpinus caroliniana Walt., (2003) Isaac, J.A.; Isaac, B.L. 15825
Corylus americana Walt., (2003) Isaac, J.A.; Cox, R. 16290
Ostrya virginiana (P. Mill.) K. Koch, (1954) Henry, L.K.; Buker, W.E.
- BIGNONIACEAE**
Campsis radicans (L.) Seem. ex Bureau, (1993) Haywood, M.J. 61
Catalpa bignonioides Walt., (2004) Isaac, J.A. 17641

BORAGINACEAE

- **Cynoglossum officinale* L., (1904) Jennings, O.E.; Eurasia
Cynoglossum virginianum L., (1996) Isaac, B.L.; Isaac, J.A. 8867
 **Echium vulgare* L., (2003) Isaac, J.A.; Coxe, R. 16280; Europe
Hackelia virginiana (L.) I.M. Johnston, (1994) Isaac, J.A. 6011
Lithospermum latifolium Michx., (2003) Isaac, J.A.; Coxe, R.; Ernst, S. 15890; **G4 S3**
Mertensia virginica (L.) Pers. ex Link, (2003) Isaac, J.A.; Isaac, B.L.; Morton, C.M. 15809
 **Myosotis arvensis* (L.) Hill, (1996) Isaac, B.L.; Isaac, J.A. 8913; Eurasia
Myosotis macroperma Engelm., (1996) Isaac, B.L.; Isaac, J.A. 8854
 **Symphytum officinale* L., (1994) Haywood, M.J. 516; Eurasia

BRASSICACEAE

- **Alliaria petiolata* (Bieb.) Cavara & Grande, (2003) Isaac, J.A. 16011; Europe
 **Arabis thaliana* (L.) Heynh., (1971) Buker, W.E.; Leichter, L.D.; Europe
Arabis canadensis L., (2003) Isaac, J.A. 16154
Arabis laevigata (Muhl. ex Willd.) Poir., (2003) Isaac, J.A.; Isaac, B.L. 15843
Arabis lyrata L., (1950) Henry, L.K.; Beer, F.H.
 **Barbarea vulgaris* Aiton f., (1996) Isaac, B.L.; Isaac, J.A. 8882; Eurasia
 **Brassica juncea* (L.) Czern., (1952) Henry, L.K.; Beer, F.H.; Eurasia
 **Brassica nigra* (L.) W.D.J. Koch, (2003) Isaac, J.A. 16618; Eurasia
 **Brassica rapa* L., (1924) Wood, S.; Europe
 **Capsella bursa-pastoris* (L.) Medik., (2003) Isaac, J.A. 16188; Eurasia
Cardamine angustata O.E. Schulz, (1992) Haywood, M.J. 6
Cardamine bulbosa (Schreb. ex Muhl.) B.S.P., (1970) Buker, W.E.; Henry, L.K.
Cardamine concatenata (Michx.) Sw., (2003) Isaac, J.A.; Isaac, B.L.; Morton, C.M. 15803
Cardamine diphylla (Michx.) Wood, (2003) Isaac, J.A.; Isaac, B.L. 15847
Cardamine douglasii Britt., (2003) Isaac, J.A.; Isaac, B.L. 15831
 **Cardamine hirsuta* L., (2003) Isaac, J.A.; Isaac, B.L.; Morton, C.M. 15804; Europe

- Cardamine parviflora* L. var. *arenicola* (Britt.) O.E. Schulz, (1951) Henry, L.K.; Buker, W.E.
Cardamine pensylvanica Muhl. ex Willd., (2003) Isaac, J.A. 15871
Cardamine rotundifolia Michx., (2002) Haywood, M.J. 584
 **Draba verna* L., (2003) Isaac, J.A.; Isaac, B.L.; Morton, C.M. 15798; Europe
 **Hesperis matronalis* L., (1996) Isaac, B.L.; Isaac, J.A. 8908; Europe
Iodanthus pinnatifidus (Michx.) Steud., (1922) Stewart; **G5 S1**
 **Lepidium campestre* (L.) Aiton f., (1995) Isaac, B.L.; Isaac, J.A. 7123; Eurasia
Lepidium virginicum L., (2003) Isaac, J.A. 16123
 **Microthlaspi perfoliatum* (L.) F.K. Mey., (1996) Isaac, B.L.; Isaac, J.A. 8843; Exotic
Rorippa palustris (L.) Bess. ssp. *fernaldiana* (Butters & Abbe) Jonsell, (2003) Isaac, J.A. 16318
 **Rorippa sylvestris* (L.) Bess., (1952) Henry, L.K.; Beer, F.H.; Europe
 **Sisymbrium officinale* (L.) Scop., (1995) Isaac, B.L.; Isaac, J.A. 7103; Europe
 **Thlaspi alliaceum* L., (2003) Isaac, J.A. 16122; Europe

CAMPANULACEAE

- Campanulastrum americana* (L.) Small, (2003) Isaac, J. 17146
Lobelia inflata L., (1993) Haywood, M.J. 177
Lobelia siphilitica L., (1993) Haywood, M.J. 141
Lobelia spicata Lam. var. *leptostachys* (A. DC.) Mackenzie & Bush, (1951) Henry, L.K.; Beer, F.H.
Lobelia spicata Lam. var. *spicata*, (1993) Haywood, M.J. 360
Triodanis perfoliata (L.) Nieuwl., (1995) Isaac, B.L.; Isaac, J.A. 7093

CAPRIFOLIACEAE

- Diervilla lonicera* P. Mill., (1922) Dickey, S.S.
Lonicera canadensis Bartr. ex Marsh., (1993) Haywood, M.J. 103
Lonicera dioica L., (1952) Henry, L.K.; Buker, W.E.
 **Lonicera japonica* Thunb., (2003) Isaac, J.A. 16136; Asia
 **Lonicera morrowi* Gray, (2003) Isaac, J.A. 16024; Japan
Lonicera sempervirens L., (1896) Hoge, M.K.
Sambucus nigra L. ssp. *canadensis* (L.) R. Bolli, (2003) Isaac, J.A. 16177

- Symphoricarpos orbiculatus* Moench, (1984) Thompson, S.A.; Nishida, J.H.; Bier, C.W. 1976
Triosteum aurantiacum Bickn. var. *glaucescens* Wieg., (2003) Isaac, J.A. 15978
Triosteum aurantiacum Bickn. var. *illinoense* (Wieg.) Palmer & Steyermark, (2002) Isaac, J.A.; Takacs, M. 14488
Viburnum acerifolium L., (1996) Isaac, B.L.; Isaac, J.A. 8860
Viburnum dentatum L., (2003) Coxe, R.
Viburnum nudum L. var. *cassinoides* (L.) Torr. & A. Gray, (1993) Haywood, M.J. 112
Viburnum prunifolium L., (2003) Isaac, J.A.; Isaac, B.L.; Morton, C.M. 15796

CARYOPHYLLACEAE

- **Agrostemma githago* L., (1896) Hoge, M.K.; Europe
 **Arenaria serpyllifolia* L., Bell 555; Europe
Cerastium arvense L., (2002) Isaac, J.A.; Takacs, M. 14400
 **Cerastium fontanum* Baumg. ssp. *vulgare* (Hartman) Greuter & Burdet, (2003) Coxe, R.; Bradburn, M.; Eurasia
Cerastium nutans Raf., (1949) Henry, L.K.
 **Dianthus armeria* L., (1995) Isaac, B.L.; Isaac, J.A. 7541; Europe
 **Myosoton aquaticum* (L.) Moench, (1995) Isaac, B.L.; Isaac, J.A. 7175; Europe
Paronychia canadensis (L.) Wood, (2002) Isaac, J.A.; Takacs, M. 14415
Paronychia fastigiata (Raf.) Fern., (1997) Grund, S.P. 1975
 **Saponaria officinalis* L., (2003) Isaac, J.A. 16613; Europe
 **Silene latifolia* Poir., (2003) Isaac, J.A. 16626; Europe
Silene stellata (L.) Aiton f., (2003) Isaac, J. 17136
Silene virginica L., (1996) Isaac, B.L.; Isaac, J.A. 8865
 **Stellaria graminea* L., (2003) Isaac, J.A. 16398; Europe
Stellaria longifolia Muhl. ex Willd., (1992) Haywood, M.J. 59
 **Stellaria media* (L.) Vill., (2003) Isaac, J.A.; Isaac, B.L. 15818; Europe
Stellaria pubera Michx., (1955) Henry, L.K.; Buker, W.E.

CELASTRACEAE

- **Celastrus orbiculatus* Thunb., (2003) Coxe, R.; Japan

- Euonymus atropurpurea* Jacq., (2003) Isaac, J.A.; Coxe, R. 16296

CHENOPODIACEAE

- Chenopodium album* L. var. *missouriense* (Aellen) I.J. Bassett & C.W. Crompton, (1954) Henry, L.K.; Buker, W.E.
 **Chenopodium ambrosioides* L., (1984) Thompson, S.A.; Nishida, J.H. 2042; Tropic America
 **Chenopodium botrys* L., (1955) Buker, W.E.; Europe

CISTACEAE

- Lechea racemulosa* Michx., (1995) Isaac, B.L.; Isaac, J.A. 7149

CLUSIACEAE

- Hypericum gentianoides* (L.) B.S.P., (1951) Henry, L.K.; Buker, W.E.
Hypericum hypericoides (L.) Crantz, (1951) Henry, L.K.; Beer, F.H.
Hypericum mutilum L., (1959) Henry, L.K.; Beer, F.H.
 **Hypericum perforatum* L., (2003) Isaac, J.A. 16185; Europe
Hypericum prolificum L., (2003) Isaac, J.A. 16147
Hypericum punctatum Lam., (1993) Haywood, M.J. 120

COMMELINACEAE

- Commelina communis* L., (1993) Haywood, M.J. 133

CONVOLVULACEAE

- Calystegia sepium* (L.) R.Br., (1951) Henry, L.K.; Beer, F.H.
Calystegia silvatica (Kit.) Griseb., (2003) Isaac, J.A. 16611
Calystegia spithamea (L.) Pursh, (1994) Haywood, M.J. 470
 **Convolvulus arvensis* L., (1896) Hoge, M.K.; Europe
Ipomoea pandurata (L.) G.Mey., (1958) Buker, W.E.

CORNACEAE

- Cornus alternifolia* L.f., (1995) Isaac, B.L.; Isaac, J.A. 7091
Cornus amomum P. Mill., (1995) Isaac, B.L.; Isaac, J.A. 7514
Cornus florida L., (2003) Isaac, B.L.; Isaac, J.A. 15819
Cornus racemosa Lam., (2003) Isaac, J.; Haywood, M.J.; Coxe, R.; Bradburn, M. 17229
Nyssa sylvatica Marsh., (1951) Henry, L.K.; Beer, F.H.

CRASSULACEAE

- Penthorum sedoides* L., (2003) Isaac, J.A. 16588
Sedum ternatum Michx., (1996) Isaac, B.L.; Isaac, J.A. 8873

CUCURBITACEAE

- Echinocystis lobata* (Michx.) Torr. & Gray, (1950) Henry, L.K.; Beer, F.H.
Sicyos angulatus L., (2003) Isaac, J.; Coxé, R., Bradburn, M. 17216

CUSCUTACEAE

- Cuscuta gronovii* Willd. ex J.A. Schultes, (1984) Thompson, S.A.; Nishida, J.H. 2046

CYPERACEAE

- Carex albicans* Willd. ex Spreng. var. *albicans*, (1950) Henry, L.K.; Beer, F.H.
Carex albusina Sheldon, (1996) Isaac, B.L.; Isaac, J.A. 8869
Carex amphibola Steud., (1967) Duman, M.G.
Carex appalachica J. Webber & P.W. Ball, (2003) Isaac, J.A.; Isaac, B.L.; Isaac, H.R. 16107
Carex blanda Dewey, (2003) Isaac, J.A. 16305
Carex bromoides Schkuhr ex Willd., Bell 180
Carex bushii Mackenzie, Bell 192
Carex cephaloidea (Dewey) Dewey, (2003) Isaac, J.A. 16379
Carex cephalophora Muhl. ex Willd., (1993) Isaac, J.A. 4512
Carex communis Bailey, (2003) Isaac, J.A.; Isaac, B.L.; Morton, C.M. 15800
Carex conjuncta Boott, (2003) Isaac, J.A. 16303
Carex cristatella Britt., (1993) Isaac, J.A. 4379
Carex debilis Michx. var. *rudgei* Bailey, Bell 181
Carex digitalis Willd., Bell 190
Carex frankii Kunth, (1995) Isaac, B.L.; Isaac, J.A. 7512
Carex gracilescens Steud., (1951) Henry, L.K.; Beer, F.H.
Carex granularis Muhl. ex Willd., (2003) Isaac, J.A. 16331
Carex hirsutella Mackenzie, (1995) Isaac, B.L.; Isaac, J.A. 7519
Carex hirtifolia Mackenzie, Bell 243
Carex hitchcockiana Dewey, Bell 166
Carex intumescens Rudge, Bell 179
Carex laevivaginata (Kükenth.) Mackenzie, (1951) Henry, L.K.; Beer, F.H.
Carex laxiculmis Schwein. var. *copulata* (Bailey) Fern., (1951) Henry, L.K.; Beer, F.H.
Carex laxiflora Lam., (1951) Henry, L.K.; Buker, W.E.
Carex lucorum Willd. ex Link., (1997) Grund 1852
Carex lupulina Muhl. ex Willd., Bell 273
Carex lurida Wahlenb., (2003) Isaac, J.A. 16368
Carex normalis Mackenzie, (1995) Isaac, B.L.; Isaac, J.A. 7092
Carex oligocarpa Schkuhr ex Willd., Duman, M.G.
Carex pensylvanica Lam., (1995) Grund, S.P.; Novak, J. 1029
Carex plantaginea Lam., (2003) Isaac, J.A. 15875
Carex platyphylla Carey, (2003) Isaac, J.A.; Isaac, B.L.; Morton, C.M. 15810
Carex prasina Wahlenb., (1951) Henry, L.K.; Beer, F.H.
Carex rosea Schkuhr ex Willd., (1995) Isaac, B.L.; Isaac, J.A. 7096
Carex scoparia Schkuhr ex Willd., (2003) Isaac, J.A. 16372
Carex sparganioides Muhl. ex Willd., (1997) Grund, S.P. 1831
Carex squarrosa L., Bell 274
**Carex stipata* Muhl. ex Willd. var. *stipata*, (2003) Isaac, J.A. 15982; Europe
Carex swanii (Fern.) Mackenzie, (2003) Isaac, J.A. 16585
Carex torta Boott ex Tuckerman, (1952) Henry, L.K.; Buker, W.E.
Carex tribuloides Wahlenb., (1952) Henry, L.K.; Beer, F.H.
Carex vulpinoidea Michx., (1995) Isaac, B.L.; Isaac, J.A. 7500
Carex willdenowii Schkuhr ex Willd., Bell 250
Carex woodii Dewey, (1998) Grund, S.P. 1897
Cyperus bipartitus Torr., (1921) Jennings, O.E.; Jennings, G.K.; et al.
Cyperus esculentus L., Donley 95
Cyperus flavescens L., (1984) Thompson, S.A.; Nishida, J.H. 2013
Cyperus strigosus L., (2003) Isaac, J.A. 16567
Eleocharis obtusa (Willd.) J.A. Schultes, (2003) Isaac, J.A. 16195
Scirpus cyperinus (L.) Kunth, (1955) Buker, W.E.
Scirpus georgianus Harper, (2003) Coxé, R.
Scirpus hattorianus Makino, (2003) Isaac, J.A. 16570
Scirpus polyphyllus Vahl, Lohr 160

DIOSCOREACEAE

- Dioscorea villosa* L., (1996) Isaac, B.L.; Isaac, J.A. 8863

DIPSACACEAE

- **Dipsacus fullonum* L., (2003) Isaac, J.A. 16629;
Exotic

ELAEAGNACEAE

- **Elaeagnus umbellata* Thunb., (2003) Isaac, J.A.;
Isaac, B.L. 15820; Asia

ERICACEAE

- Epigaea repens* L., (1951) Buker, W.E.
Gaultheria procumbens L., (1950) Henry, L.K.;
Buker, W.E.
Gaylussacia baccata (Wangenh.) K. Koch, (2004)
Isaac, J.A. 17375
Kalmia latifolia L., (1951) Henry, L.K.; Beer, F.H.
Oxydendrum arboreum (L.) DC., (2004) Isaac, J.A.
17638; **G5.5354**
Rhododendron maximum L., Bell 580
Rhododendron periclymenoides (Michx.)
Shinners, (2004) Isaac, J.A. 17377
Vaccinium corymbosum L., (1907) Jennings, O.E.
Vaccinium pallidum Aiton, (2002) Isaac, J.A.;
Takacs, M. 14402
Vaccinium stamineum L., (2002) Isaac, J.A.; Takacs,
M. 14404

EUPHORBIACEAE

- Acalypha rhomboidea* Raf., (1992) Haywood, M.H.
404
Acalypha virginica L., (1993) Haywood, M.J. 211
Chamaesyce maculata (L.) Small, (1955) Buker,
W.E.
Chamaesyce nutans (Lag.) Small, (1993)
Haywood, M.J. 170
Euphorbia commutata Engelm., (1997) Grund,
S.P.; Gray, A.; Folman, J.; Gardner, M. 1820
Euphorbia corollata L., (2003) Isaac, J.A. 16390

FABACEAE

- Amphicarpaea bracteata* (L.) Fern., (1984)
Thompson, S.A.; Nishida, J.H.; Bier, C.W. 1945
Apios americana Medik., (1993) Haywood, M.J.
159
Cercis canadensis L., (2003) Isaac, J.A.; Isaac, B.L.
15821
Chamaecrista nictitans (L.) Moench, (1953) Buker,
W.E.
**Coronilla varia* L., (1995) Isaac, B.L.; Isaac, J.A. 7505;
Europe
Desmodium canadense (L.) DC., (1993) Haywood,
M.J. 194

- Desmodium glutinosum* (Muhl. Ex Willd.) Wood,
(2003) Isaac, J.A. 16349
Desmodium marilandicum (L.) DC., (1966) Buker,
W.E.
Desmodium nudiflorum (L.) DC., (1951) Henry, L.K.;
Beer, F.H.
Desmodium paniculatum (L.) DC., (2003) Isaac, J.A.
17156
Desmodium perplexum Schub., (1993) Haywood,
M.J. 157
Desmodium rotundifolium DC., (1954) Henry, L.K.;
Buker, W.E.
Gleditsia triacanthos L., (2004) Isaac, A.A. 17508
Gymnocladus dioica (L.) K. Koch, Donley 160
**Lathyrus sylvestris* L., (1995) Isaac, B.L.; Isaac, J.A.
7485; Exotic
Lespedeza hirta (L.) Hornem., (1974) Buker, W.E.
Lespedeza procumbens Michx., (1921) Jennings,
O.E.; Jennings, G.K.; et al.
Lespedeza repens (L.) W. Bart., (1954) Henry, L.K.;
Buker, W.E.
Lespedeza violacea (L.) Pers., (1969) Buker, W.E.
Lespedeza virginica (L.) Britt, Lohr 174
**Lotus corniculatus* L., (2003) Isaac, J.A. 16176;
Europe
**Medicago lupulina* L., (1995) Isaac, B.L.; Isaac, J.A.
7495; Eurasia
**Medicago sativa* L., (1958) Buker, W.E.; Eurasia
**Melilotus officinalis* (L.) Lam., (2003) Isaac, J.A.
16113; Eurasia
Robinia pseudoacacia L., (2003) Isaac, J.A. 16039
Senna hebecarpa (Fern.) Irwin & Barneby, (2003)
Isaac, J. 17153
Senna marilandica (L.) Link, (1951) Henry, L.K.;
Beer, F.H.; **G5.51**
**Trifolium aureum* Pollich, (2003) Isaac, J.A. 16324;
Eurasia
**Trifolium campestre* Schreb., (2003) Isaac, J.A.
15988; Europe
**Trifolium hybridum* L., (1985) Thompson, S.A.;
Nishida, J.H. 2351; Eurasia
**Trifolium pratense* L., (1995) Isaac, B.L.; Isaac, J.A.
7496; Europe
**Trifolium repens* L., (2003) Isaac, J.A. 16117; Europe
Vicia caroliniana Walt., (1994) Haywood, M.J. 446
**Vicia cracca* L., (1896) Hoge, M.K.; Eurasia
**Vicia villosa* Roth, (2003) Isaac, J.A. 16401; Europe
- FAGACEAE**
Castanea dentata (Marsh.) Borkh., (2003) Isaac,
J.A. 16586

- Fagus grandifolia* Ehrh., (2004) Isaac, J.A. 17633
Quercus alba L., (1985) Thompson, S.A. 2435
Quercus bicolor Willd., (1921) Dickey, S.S.
Quercus coccinea Muenchh., (1954) Henry, L.K.; Buker, W.E.
Quercus imbricaria Michx., (2003) Isaac, J.A. 16159
Quercus muehlenbergii Engelm., (1984) Thompson, S.A.; Nishida, J.H.; Bier, C.W. 2002
Quercus prinus L., (1991) Isaac, J.A. 3647
Quercus rubra L., (1985) Thompson, S.A. 2432
Quercus stellata Wangenh., (1948) Bryner, C.L. 501
Quercus velutina Lam., (1985) Thompson, S.A. 2434
Quercus x leana Nutt. (pro sp.), (1948) Bryner, C.L. 502

FUMARIACEAE

- Corydalis aurea* Willd., (1996) Haywood, M.J. 634
Corydalis flavula (Raf.) DC., (2003) Isaac, B.L.; Isaac, J.A. 15827
Dicentra canadensis (Goldie) Walp., (2003) Isaac, B.L.; Isaac, J.A. 15844
Dicentra cucullaria (L.) Bernh., (2003) Isaac, B.L.; Isaac, J.A. 15858

GENTIANACEAE

- Gentiana andrewsii* Griseb. var. *andrewsii*, (2003) Coxe, R.; Block, R.; Bradburn, M.
Gentiana clausa Raf., (1954) Henry, L.K.; Buker, W.E.
Obolaria virginica L., (1952) Henry, L.K.; Buker, W.E.
Sabatia angularis (L.) Pursh, (1998) Grund, S.P. 2061

GERANIACEAE

- **Geranium columbinum* L., (1993) Isaac, J.A. 4505; Europe
Geranium maculatum L., (2003) Isaac, J.A.; Isaac, B.L. 15838
 **Geranium sibiricum* L., (1984) Thompson, S.A.; Nishida, J.H.; Bier, C. 1954; Eurasia
 **Geranium thunbergii* Sieb. & Zucc. ex Lindl. & Paxton, (1984) Thompson, S.A.; Nishida, J.H. 2007; Exotic

GROSSULARIACEAE

- Ribes cynosbati* L., (2003) Isaac, J.A. 16334
 **Ribes rubrum* L., Rhoads, A.; Eurasia

HALORAGACEAE

- Myriophyllum heterophyllum* Michx., (2003) Coxe, R., **G5 S1**

HAMAMELIDACEAE

- Hamamelis virginiana* L., (2004) Isaac, J.A. 17635

HIPPOCASTANACEAE

- Aesculus flava* Aiton, (2003) Isaac, J.A.; Isaac, B.L.; Morton, C.M. 15811
Aesculus glabra Willd., (2003) Isaac, J.A. 15883

HYDRANGEACEAE

- Hydrangea arborescens* L., (2003) Isaac, J.A. 16366
 **Philadelphus coronarius* L., (1896) Hoge, M.K.; Eurasia

HYDROPHYLLACEAE

- Hydrophyllum appendiculatum* Michx., (1995) Isaac, B.L.; Isaac, J.A. 7183
Hydrophyllum canadense L., (1995) Isaac, B.L.; Isaac, J.A. 7164
Hydrophyllum macrophyllum Nutt., (2003) Isaac, J.A. 15882 **G5 S1**
Hydrophyllum virginianum L., (1996) Isaac, B.L.; Isaac, J.A. 8846
Phacelia purshii Buckl., (2003) Isaac, J.A. 16040

IRIDACEAE

- Iris cristata* Aiton, (2004) Isaac, J.A. 17380; **G5 S1**
Iris pseudacorus L., (2003) Isaac, J.A. 16193
Sisyrinchium angustifolium P. Mill., (1993) Isaac, J.A. 4377

JUGLANDACEAE

- Carya alba* (L.) Nutt. ex Ell., (1921) Jennings, O.E.
Carya cordiformis (Wangenh.) K. Koch, (1993) Haywood, M.J. 197
Carya glabra (P. Mill.) Sweet, (1905) Jennings, O.E.
Carya ovalis (Wangenh.) Sarg., (1954) Henry, L.K.; Buker, W.E.
Carya ovata (P. Mill.) K. Koch, (1921) Jennings, O.E.
Juglans cinerea L., (2003) Isaac, J.A. 16392
Juglans nigra L., (1951) Henry, L.K.; Beer, F.H.

JUNCACEAE

- Juncus acuminatus* Michx., (2003) Coxe, R.; Bradburn, M.
Juncus effusus L. var. *pylaei* (Laharpe) Fern. & Wieg., (1954) Henry, L.K.; Buker, W.E.
Juncus effusus L. var. *solutus* Fern. & Wieg., (2003) Isaac, J.A. 16190
Juncus marginatus Rostk., (1951) Henry, L.K.; Beer, F.H.
Juncus tenuis Willd., (2003) Isaac, J.A. 16307
Juncus torreyi Coville, (2002) Paluh, A.T. 1
Luzula acuminata Raf., (1996) Isaac, B.L.; Isaac, J.A. 8888
Luzula echinata (Small) F.J. Herm., Bell 422

Luzula multiflora (Ehrh.) Lej., (1996) Isaac, B.L.; Isaac, J.A. 8887

LAMIACEAE

Agastache nepetoides (L.) Kuntze, (1975) Buker, W.E.

Blephilia hirsuta (Pursh) Benth., (1995) Isaac, B.L.; Isaac, J.A. 7520

**Clinopodium vulgare* L., (2003) Isaac, J.A. 16370; Europe

Collinsonia canadensis L., (1984) Thompson, S.A.; Nishida, J.H.; Bier, C.W. 1992

Cunila origanoides (L.) Britt., (1951) Henry, L.K.; Beer, F.H.

**Glechoma hederacea* L., (1996) Isaac, J.A.; Isaac, B.L. 8840; Eurasia

Hedeoma pulegioides (L.) Pers., (1994) Thompson, S.A.; Rawlins, J.E. 11731

Isanthes brachiatus (L.) B.S.P., 1921) Jennings, O.E.

**Lamium amplexicaule* L., (1996) Haywood, M.J. 631; Eurasia

**Lamium maculatum* L., (1947) Henry, L.K.; Eurasia

**Lamium purpureum* L., (2003) Isaac, J.A.; Isaac, B.L.; Morton, C.M. 15802; Eurasia

**Leonurus cardiaca* L., (1995) Isaac, B.L.; Isaac, J.A. 7481; Asia

Lycopus americanus Muhl. ex W. Bart., (1984) Thompson, S.A.; Nishida, J.H. 2026

Lycopus uniflorus Michx. var. *uniflorus*, (1993) Haywood, M.J. 154

Lycopus virginicus L., (2003) Isaac, J.A. 16572

Meehania cordata (Nutt.) Britt., Bell 619; **G5:51**

Mentha arvensis L., (1950) Henry, L.K.; Buker, W.E.

**Mentha x piperita* L. (pro sp.), (1951) Henry, L.K.; Beer, F.H.; Eurasia

**Mentha spicata* L., (1951) Henry, L.K.; Beer, F.H.; Europe

Monarda clinopodia L., (2003) Isaac, J.A. 16388

Monarda fistulosa L., (1995) Isaac, B.L.; Isaac, J.A. 7538

Monarda media Willd., (1907) Jennings, O.E.

**Nepeta cataria* L., (1954) Henry, L.K.; Buker, W.E.; Europe

Prunella vulgaris L. ssp. *lanceolata* (W. Bart.) Hulten, (1995) Isaac, B.L.; Isaac, J.A. 7529

Pycnanthemum incanum (L.) Michx., (1951) Henry, L.K.; Buker, W.E.

Pycnanthemum tenuifolium Schrad., (1951) Henry, L.K.; Buker, W.E.

Salvia lyrata L., (2003) Isaac, J.A. 16048

Scutellaria incana Biehler, (2003) Isaac, J.A. 16579

Scutellaria lateriflora L., (1984) Thompson, S.A.; Nishida, J.H. 2077

Scutellaria nervosa Pursh, (2003) Isaac, J.A. 16332

Scutellaria saxatilis Riddell, (2003) Isaac, J.; Haywood, M.J.; Coxe, R.; Bradburn, M. 17230;

G3:51

Stachys nuttallii Schuttflw. ex Benth., (2003) Isaac, J.; Coxe, R.; Bradburn, M. 17214

Stachys tenuifolia Willd., (2003) Isaac, J.; Coxe, R.; Bradburn, M. 17223

Teucrium canadense L., (1993) Haywood, M.J. 172

Trichostema dichotomum L., (1921) Dickey, S.S.

LAURACEAE

Lindera benzoin (L.) Blume, (2003) Isaac, J.A.; Isaac, B.L.; Morton, C.M. 15799

Sassafras albidum (Nutt.) Nees, (1995) Isaac, B.L.; Isaac, J.A. 7095

LEMNACEAE

Lemna minor L., (2003) Isaac, J.A. 16402

LILIACEAE

Allium canadense L., (2003) Isaac, J.A. 16132

Allium cernuum Roth, (2003) Isaac, J.A. 16583

Allium tricoccum Aiton, (1996) Haywood, M.J. 411

**Allium vineale* L., (2003) Isaac, J.A. 16139; Europe

Clintonia umbellulata (Michx.) Morong, Bell 377

**Convallaria majalis* L., (1896) Hoge, M.K.; Europe

Erythronium albidum Nutt., (1993) Haywood, M.J. 77; **G5:53**

Erythronium americanum Ker-Gawl., (2003) Isaac, J.A.; Isaac, B.L. 15832

**Hemerocallis fulva* (L.) L., (2003) Isaac, J. 16317; Asia

**Hyacinthus orientalis* L., (1941) Henry, L.K.; Exotic

Hyopsis hirsuta (L.) Coville, Sebben

Lilium superbum L., (2003) Coxe, R.; Bradburn, M.

Maianthemum racemosum (L.) Link, (2003) J.A. Isaac 16023

Medeola virginiana L., (1993) Isaac, J.A. 4367

**Narcissus poeticus* L., (1896) Hoge, M.K.; Europe

**Ornithogalum umbellatum* L., (1995) Isaac, B.L.; Isaac, J.A. 7182; Europe

Polygonatum biflorum (Walt.) Eil. var. *commutatum* (J.A. & J.H. Schultes) Morong

{(1975) Buker, W.E.

Polygonatum pubescens (Willd.) Pursh, (1996) Isaac, B.L.; Isaac, J.A. 8899

Prosartes lanuginosa (Michx.) D. Don, (1970) Buker, W.E.; [*Disporum lanuginosa* (Michx.) Nichols.]

Trillium erectum L., (2003) Isaac, B.L.; Isaac, J.A. 15854

Trillium grandiflorum (Michx.) Salisb., (2003) Isaac, J.A.; Isaac, B.L.; Morton, C.M. 15807

Trillium nivale Riddell, (1997) Grund, S.P.; Gray, A.; Folman, J.; Gardner, M. 1818; **G4.53**

Trillium sessile L., (2003) Isaac, J.A.; Isaac, B.L.; Morton, C.M. 15808

Uvularia grandiflora Sm., (2003) Isaac, J.A.; Isaac, B.L. 15841

Uvularia perfoliata L., (1993) Haywood, M.J. 79

LIMNANTHACEAE

Floerkea proserpinacoides Willd., (2003) Isaac, J.A.; Isaac, B.L. 15830

LINACEAE

Linum virginianum L., (1951) Henry, L.K.; Beer, F.H.

LYTHRACEAE

Cuphea viscosissima Jacq., (1991) Isaac, J.A. 3674

**Lythrum salicaria* L., (1993) Haywood, M.J. 151; Europe

MAGNOLIACEAE

Liriodendron tulipifera L., (1996) Isaac, B.L.; Isaac, J.A. 8868

Magnolia acuminata (L.) L., (1904) Jennings, O.E.

MALVACEAE

**Abutilon theophrastii* Medik., (1951) Henry, L.K.; Beer, F.H.; Asia

**Hibiscus trionum* L., (1984) Thompson, S.A.; Nishida, J.H. 2044; Europe

**Malva moschata* L., Lohr, Europe

**Malva neglecta* Wallr., Lohr 260; Eurasia/ N. Africa

**Sida spinosa* L., (1951) Henry, L.K.; Beer, F.H.; Tropics

MELASTOMACEAE

Rhexia virginica L., (2003) Isaac, J.A. 17150

MENISPERMACEAE

Menispermum canadense L., (2003) Isaac, J.A. 16339

MOLLUGINACEAE

**Mollugo verticillata* L., (1951) Henry, L.K.; Beer, F.H.; Tropic America

MONOTROPACEAE

Monotropia hypopithys L., (2004) Isaac, J.A. 17653

Monotropia uniflora L., (2003) Isaac, J.A. 16414

MORACEAE

Maclura pomifera (Raf.) Schneid., (2003) Isaac, J.A. 16316

**Morus alba* L., (1951) Henry, L.K.; Beer, F.H., Asia

Morus rubra L., (1996) Isaac, B.L.; Isaac, J.A. 8864

OLEACEAE

Chionantheus virginicus L., (1896) Hoge, M.K.

Fraxinus americana L., (2003) Isaac, J.A. 16403

Fraxinus nigra Marsh., Bell

**Syringa vulgaris* L., (1896) Hoge, M.K.; Europe

ONAGRACEAE

Circaea lutetiana L. ssp. *canadensis* (L.) Aschers. & Magnus, (1996) Haywood, M.J. 620

Epilobium coloratum Biehler, (1984) Thompson, S.A.; Nishida, J.H. 2043

Gaura biennis L., (1993) Haywood, M.J. 179

Ludwigia alternifolia L., (2003) Isaac, J.A. 17149

Ludwigia palustris (L.) Ell., (2003) Coxe, R.; Bradburn, M.

Oenothera biennis L., (2003) Isaac, J.A. 16605

Oenothera fruticosa L., (1896) Hoge, M.K.

Oenothera parviflora L., Donley, B.F.

Oenothera perennis L., (1994) Haywood, M.J. 468

ORCHIDACEAE

Aplectrum hyemale (Muhl. ex Willd.) Torr., (1997) Shriver, J.S.; Shriver, A.; Smith, C. 868. **G5 S3**

Cypripedium acaule Aiton, (1922) Dickey, S.S.

Goodyera pubescens (Willd.) R. Br. ex Aiton f., (1997) Shriver, J.S.; Shriver, A.; Smith, C. 867

Isotria medeoloides (Pursh) Raf., (1922) Bright, J.

Isotria verticillata Raf., (1922) Dickey, S.S.

Liparis illifolia (L.) L.C. Rich. ex Ker-Gawl., (1995) Isaac, B.L.; Isaac, J.A. 7159

Platanthera lacera (Michx.) G. Don, (2003) Isaac, J.A.; Coxe, R. 16292

Platanthera orbiculata (Pursh) Lindl., (1953) Krouse, D.H.

Spiranthes cernua (L.) L.C. Rich., Lohr, W.N.

Spiranthes lacera (Raf.) Raf. var. *gracilis* (Bigelow) Luer, (2004) Isaac, J.A.; Smith, C. 18488

Spiranthes ochroleuca (Rydb.) Rydb., (1969) Buker, W.E.

Spiranthes ovalis Lindl., (2003) Isaac, J.; Coxe, R.; Bradburn, M. 17225

OROBANCHACEAE

Conopholis americana (L.) Wallr. f., (2003) Isaac, J.A. 16165

Epifagus virginiana (L.) W. Bart., (1969) Buker, W.E.

Orobanch uniflora L., (1996) Isaac, B.L.; Isaac, J.A. 8871

OXALIDACEAE

Oxalis dillenii Jacq., (2003) Isaac, J.A. 16376
Oxalis grandis Small, (2003) Isaac, J.A. 16326
Oxalis stricta L., (1993) Haywood, M.J. 100
Oxalis violacea L., (1996) Haywood, M.J. 629

PAPAVERACEAE

**Chelidonium majus* L., (1994) Haywood, M.J. 426; Europe
Sanguinaria canadensis L., (2003) Isaac, J.A.; Isaac, B.L. 15855

PASSIFLORACEAE

Passiflora lutea L., (2003) Isaac, J.; Cox, R.; Bradburn, M. 17221; **G5 S1**

PHYTOLACCACEAE

Phytolacca americana L., (1993) Haywood, M.J. 308

PLANTAGINACEAE

Plantago aristata Michx., (1954) Henry, L.K.; Buker, W.E.
 **Plantago lanceolata* L., (1996) Isaac, B.L.; Isaac, J.A. 8900; Europe
 **Plantago major* L., (1984) Thompson, S.A.; Nishida, J.H. 2050; Europe
Plantago rugelii Dcne., (2003) Isaac, J.A. 16399
Plantago virginica L., (1975) Buker, W.E.

PLATANACEAE

Platanus occidentalis L., (1995) Isaac, B.L.; Isaac, J.A. 7491

POACEAE

**Agrostis gigantea* Roth, (2003) Isaac, J.A.; Cox, R. 16285; Europe
Agrostis perennans (Walt.) Tuckerman, (1994) Thompson, S.A.; Rawlins, J.E. 11969
Agrostis scabra Willd., Pohl 5922
Andropogon virginicus L., (1951) Henry, L.K.; Beer, F.H.
 **Anthoxanthum odoratum* L., (2003) Isaac, J.A. 15989; Eurasia
Aristida dichotoma Michx. var. *dichotoma*, Bell 334
 **Arrhenatherum elatius* (L.) Beauv. ex J. & C. Presl, (1995) Isaac, B.L.; Isaac, J.A. 7516; Europe
 **Avena fatua* L., (1971) Buker, W.E.; Europe
Bromus ciliatus L., (2003) Cox, R.

**Bromus commutatus* Schrad., (2003) Isaac, J.A. 16175; Europe

**Bromus inermis* Leyss., (1995) Isaac, B.L.; Isaac, J.A. 7489; Europe

**Bromus japonicus* Thunb. ex Murr., (1995) Isaac, B.L.; Isaac, J.A. 7488; Eurasia

Bromus latiglumis (Shear) A.S. Hitchc., Fogg 18323

Bromus pubescens Muhl. ex Willd., (2003) Isaac, J.A. 16416

**Bromus racemosus* L., (1985) Thompson, S.A.; Nishida, J.H. 2419; Europe

**Bromus sterilis* L., (1996) Isaac, B.L.; Isaac, J.A. 8844; Europe

Chasmanthium latifolium (Michx.) Yates, (2003) Cox, R.; Bradburn, M.; **G5 S1**

Cinna arundinacea L., (1984) Thompson, S.A.; Nishida, J.H.; Bier, C.W. 1987

**Dactylis glomerata* L., (2003) Isaac, J.A.; Isaac, B.L.; Isaac, H.R. 16096; Europe

Danthonia compressa Austin ex Peck, (2003) Isaac, J.A. 16151

Danthonia spicata (L.) Beauv. ex Roemer & J.A. Schultes, (2003) Isaac, J.A. 16352

Diarrhena americana Beauv., (2002) Isaac, B.L.; Isaac, J.A. 15787; **G4? S1**

Dichanthelium acuminatum (Sw.) Gould & C.A. Clark, (2004) Isaac, J.A. 17733

Dichanthelium boscii (Poir.) Gould & C.A. Clark, (1995) Isaac, B.L.; Isaac, J.A. 7162

Dichanthelium clandestinum (L.) Gould, (1995) Isaac, B.L.; Isaac, J.A. 7535

Dichanthelium commutatum (J.A. Schultes) Gould, (2003) Isaac, J.A. 16409

Dichanthelium dichotomum (L.) Gould, (1904) Jennings, O.E.

Dichanthelium latifolium (L.) Gould & C.A. Clark, (2003) Isaac, J.A. 16346

Dichanthelium linearifolium (Scribn. ex Nash) Gould, (2004) Isaac, J.A. 17629

Dichanthelium sabulorum (Lam.) Gould & C.A. Clark var. *thinium* (A.S. Hitchc. & Chase) Gould & C.A. Clark, (2002) Isaac, J.A.; Takacs, M. 14416

**Digitaria ischaemum* (Schreb.) Schreb. ex Muhl., (1984) Thompson, S.A.; Nishida, J.H. 2075; Eurasia

**Echinochloa crus-galli* (L.) Beauv., (1993) Haywood, M.J. 165; Eurasia

**Eleusine indica* (L.) Gaertn., (2003) Isaac, J.A. 16616; Old World Tropics

- Elymus canadensis* L., (1951) Henry, L.K.; Buker, W.E.
- Elymus hystrix* L., (2003) Isaac, J.A. 16299
- **Elymus repens* (L.) Gould, (2003) Isaac, J.A. 16119; Exotic
- Elymus riparius* Wieg., (2003) Isaac, J.A. 16172
- Elymus villosus* Muhl. ex Willd., (2003) Isaac, J.A. 16135
- Elymus virginicus* L., (1951) Henry, L.K.; Buker, W.E.
- Eragrostis spectabilis* (Pursh) Steud., (1941) Davis, H.A.; et al.
- Festuca subverticillata* (Pers.) Alexeev, (2003) Isaac, J.A.; Isaac, B.L.; Isaac, H.R. 16103
- Glyceria septentrionalis* A.S. Hitchc., Bell 271
- Glyceria striata* (Lam.) A.S. Hitchc., (2003) Isaac, J.A. 16192
- **Holcus lanatus* L., (2003) Isaac, J.A. 16172; Europe
- Leersia oryzoides* (L.) Sw., (1951) Henry, L.K.; Beer, F.H.
- Leersia virginica* Willd., (1984) Thompson, S.A.; Nishida, J.H.; Bier, C.W. 1999
- **Lolium perenne* L., (1995) Isaac, B.L.; Isaac, J.A. 7498; Europe
- **Lolium pratense* (Huds.) S.J. Darbyshire, (2003) Isaac, J.A.; Isaac, B.L.; Isaac, H.R. 16097; Europe
- Muhlenbergia frondosa* (Poir.) Fern, Bell 3645
- Muhlenbergia schreberi* J.F. Gmel., (1984) Thompson, S.A.; Nishida, J.H. 2076
- Panicum dichotomiflorum* Michx., (1984) Thompson, S.A.; Nishida, J.H. 2045
- Panicum philadelphicum* Bernh. ex Trin., (1985) Thompson, S.A.; Nishida, J.H. 2516
- **Pennisetum glaucum* (L.) R. Br., (1993) Haywood, M.J. 164; Exotic
- Phalaris arundinacea* L., (2003) Isaac, J.A. 16309
- **Phleum pratense* L., (1954) Henry, L.K.; Buker, W.E.; Europe
- Poa alsodes* A. Gray, (1951) Henry, L.K.; Beer, F.H.
- **Poa annua* L., (1996) Thompson, S.A.; Rawlins, J.E. 12466; Eurasia
- **Poa compressa* L., (1993) Isaac, J.A. 4375; Europe
- Poa cuspidata* Nutt., (2003) Isaac, J.A.; Isaac, B.L.; Morton, C.M. 15805
- **Poa pratensis* L., (1984) Nishida, J.H.; Bier, C.W. 709; Europe
- Poa sylvestris* Gray, (1951) Henry, L.K.; Beer, F.H.
- **Poa trivialis* L., (2003) Isaac, J.A. 16198; Europe
- Schizachyrium scoparium* (Michx.) Nash, (1904) Jennings, O.E.
- Schizachyrium scoparium* (Michx.) Nash var. *scoparium*, (1904) Jennings, O.E.
- **Setaria faberi* Herrm., (1951) Henry, L.K.; Beer, F.H.; Asia
- **Setaria viridis* (L.) Beauv. var. *viridis*, (2003) Isaac, J. 16389; Eurasia
- Sphenopholis intermedia* (Rydb.) Rydb., (1996) Thompson, S.A.; Rawlins, J.E. 12459
- Sphenopholis nitida* (Biehler) Scribn., (2003) Isaac, J.A. 16160
- Sporobolus vaginiflorus* (Torr. ex Gray) Wood, (2003) Isaac, J.; Cox, R.; Bradburn, M. 17227
- Tridens flavus* (L.) A.S. Hitchc., (2004) Isaac, J.A. 18557

POLEMONIACEAE

- Phlox divaricata* L., (1999) Haywood, M.J. 607
- Phlox maculata* L. ssp. *maculata*, Wherry
- Phlox paniculata* L., (2003) Isaac, J.A. 16607
- Phlox stolonifera* Sims, (1952) Henry, L.K.; Buker, W.E.
- Polemonium reptans* L., (2003) Isaac, J.A. 16170

POLYGALACEAE

- Polygala sanguinea* L., (2003) Isaac, J.A. 16639
- Polygala verticillata* L. var. *verticillata*, (1954) Henry, L.K.; Buker, W.E.

POLYGONACEAE

- **Polygonum aviculare* L., (1994) Thompson, S.A.; Rawlins, J.E. 11730; Europe
- **Polygonum caespitosum* Blume, (2003) Isaac, J.A. 16189; Asia
- **Polygonum convolvulus* L., (1954) Henry, L.K.; Buker, W.E.; Europe
- Polygonum erectum* L., (2003) Isaac, J.A. 16571
- **Polygonum hydropiper* L., (1984) Thompson, S.A.; Nishida, J.H.; Bier, C.W. 1986; Europe
- Polygonum hydropiperoides* Michx., (2003) Isaac, J.A. 16589
- Polygonum pennsylvanicum* L., (1984) Thompson, S.A.; Nishida, J.H. 2054
- **Polygonum persicaria* L., (1984) Thompson, S.A.; Nishida, J.H. 2055; Europe
- Polygonum punctatum* Ell. var. *confertiflorum* (Meisn.) Fassett, (2003) Isaac, J.A. 16590
- Polygonum sagittatum* L., (1984) Thompson, S.A.; Nishida, J.H.; Bier, C.W. 1975
- Polygonum scandens* L. var. *scandens*, (2004) Isaac, J.A. 18515
- Polygonum virginianum* L., (1998) Grund, S.P. 2048

**Rumex acetosella* L., (1996) Isaac, B.L.; Isaac, J.A. 8874; Europe

**Rumex crispus* L., (2003) Isaac, J.A. 16110; Europe

**Rumex obtusifolius* L., (2003) Isaac, J.A. 16302; Europe

PORTULACACEAE

Claytonia caroliniana Michx., (2003) Isaac, J.A.; Isaac, B.L. 15853

Claytonia virginica L., (2003) Isaac, J.A.; Isaac, B.L.; Morton, C.M. 15797

Portulaca oleracea L., (2003) Isaac, J.A. 16624

PRIMULACEAE

Lysimachia ciliata L., (1995) Isaac, B.L.; Isaac, J.A. 7525

Lysimachia lanceolata Walt., (1993) Haywood, M.J. 69

**Lysimachia nummularia* L., (1995) Isaac, B.L.; Isaac, J.A. 7508; Europe

Lysimachia quadrifolia L., (1995) Isaac, B.L.; Isaac, J.A. 7531

PYROLACEAE

Chimaphila maculata (L.) Pursh, (2004) Isaac, J.A. 17654

Pyrola americana Sweet, (1968) Buker, W.E.

RANUNCULACEAE

Aconitum uncinatum L., (1932) Bright, J. 7641;

G4-S2

Actaea pachypoda Ell., (1969) Buker, W.E.

Actaea racemosa L. var. *racemosa*, (2003) Isaac, J.A. 16575

Anemone quinquefolia L., Lohr

Anemone virginiana L., (2003) Isaac, J.A. 16121

Aquilegia canadensis L., (2003) Isaac, J.A. 15900

Caltha palustris L. var. *palustris*, Bell 423

Clematis occidentalis (Hornem.) DC., (1896) Hoge, M.K.

Clematis virginiana L., (2003) Isaac, J. 17138

Delphinium tricornis Michx., (1996) Isaac, B.L.; Isaac, J.A. 8850

**Helleborus viridis* L., (1940) Baker; Exotic

Hepatica nobilis Schreber var. *acuta* (Pursh) Steyermark, (2003) Isaac, B.L.; Isaac, J.A.; Morton C.M. 15814

Hepatica nobilis Schreber var. *obtusata* (Pursh) Steyermark, (1952) Henry, L.K.; Buker, W.E.

Hydrastis canadensis L., (2003) Isaac, J.A. 16335

Ranunculus abortivus L., (2003) Isaac, J.A.; Isaac, B.L.; Isaac, H.R. 16098

**Ranunculus acris* L., (1995) Haywood, M.J. 561; Europe

Ranunculus allegheniensis Britt., (1996) Isaac, B.L.; Isaac, J.A. 8909

**Ranunculus ficaria* L., (2003) Isaac, J.A.; Isaac, B.L.; Morton, C.M. 15812; Eurasia

Ranunculus hispidus Michx. var. *hispidus*, (2003) Isaac, J.A.; Isaac, B.L. 15835

Ranunculus hispidus Michx. var. *nitidus* (Chapman) T. Duncan, (1994) Haywood, M.J. 25

Ranunculus micranthus Nutt., (2003) Isaac, J.A.; Isaac, B.L. 15828

Ranunculus recurvatus Poir., (1996) Isaac, J.A.; Isaac, B.L. 8902

**Ranunculus repens* L., (1995) Isaac, J.A.; Isaac, B.L. 7178; Europe

Thalictrum dioicum L., (2003) Isaac, J.A.; Isaac, B.L. 15842

Thalictrum pubescens Pursh, (2003) Isaac, J.A. 16356

Thalictrum thalictroides (L.) Eames & Boivin, (2003) Isaac, J.A.; Isaac, B.L.; Morton, C.M. 15815

RHAMNACEAE

Ceanothus americanus L., (2003) Isaac, J.A. 16378

ROSACEAE

Agrimonia gryposepala Wallr., (1993) Haywood, M.J. 95

Agrimonia parviflora Aiton, (1951) Henry, L.K.; Beer, F.H.

Agrimonia pubescens Wallr., (1998) Grund, S.P. 2058

Agrimonia rostellata Wallr., (2003) Cox, R.; Isaac, J.; Haywood, M.J.

Amelanchier arborea (Michx.f.) Fern., (2003) Isaac, J.A.; Isaac, B.L.; Morton, C.M. 15806

Amelanchier stolonifera Wieg., (1949) Henry, L.K. *Aruncus dioicus* (Walt.) Fern., (2003) Isaac, J.A. 16178

Crataegus crus-gallii L., (2003) Cox, R.; Isaac, J.A.; Ernst, S.

Crataegus punctata Jacq., (2003) Isaac, J.A. 16020

Fragaria virginiana Duchesne, (1994) Haywood, M.J. 39

Geum aleppicum Jacq., (1993) Haywood, M.J. 68

Geum canadense Jacq. var. *canadense*, (1995) Isaac, J.A.; Isaac, B.L. 7517

Geum vernum (Raf.) Torr. & Gray, (1996) Isaac, J.A.; Isaac, B.L. 8856

Geum virginianum L., (1950) Henry, L.K.; Buker, W.E.
Malus coronari (L.) P. Mill., (2003) Isaac, J.A. 16417
 **Malus pumila* P. Mill., (2003) Isaac, J.A.; Isaac, B.L. 15822; Eurasia
Physocarpus opulifolius (L.) Maxim., (1994) Haywood, M.J. 477
Potentilla canadensis L., (1999) Haywood, M.J. 05
Potentilla norvegica L. ssp. *monspeliensis* (L.) Aschers. & Graebn., (1995) Isaac, B.L.; Isaac, J.A. 7501
 **Potentilla recta* L., (1995) Isaac, B.L.; Isaac, J.A. 7533; Europe
Potentilla simplex Michx., (1996) Isaac, B.L.; Isaac, J.A. 8896
Prunus americana Marsh., (1951) Henry, L.K.; Beer, F.H.
 **Prunus avium* (L.) L., (2003) Coxé, R.; Bradburn, M.; Eurasia
Prunus serotina Ehrh., (2003) Isaac, J.A. 16027
Prunus virginiana L., (1975) Buker, W.E.
 **Rhodotypos scandens* (Thunb.) Makino, (2003) Isaac, J.A. 15977; Japan
Rosa carolina L. var. *carolina*, (2003) Isaac, J.A.; Coxé, R. 16281
 **Rosa eglanteria* L., (1992) Haywood, M.J. 377; Europe
 **Rosa multiflora* Thunb. ex Murr., (1995) Isaac, B.L.; Isaac, J.A. 7539; Asia
Rosa palustris Marsh., (1951) Henry, L.K.; Beer, F.H.
Rubus allegheniensis Porter, (1997) Grund, S.P. 1856
Rubus alumnus Bailey, (1950) Davis, H.A.; Davis, T. 9145
Rubus bellobatus Bailey, (1950) Davis, H.A.; Davis, T. 9154
Rubus flagellaris Willd., (2003) Isaac, J.A. 16046
Rubus laudatus Berger, (1951) Davis, H.A.; Davis, T. 9495
Rubus multiflorus Bailey, (1951) Davis, H.A.; Davis, T. 9479
Rubus occidentalis L., (2003) Isaac, J.A. 16030
Rubus odoratus L., (1958) Buker, W.E.
Rubus pensilvanicus Poir., (1951) Davis, H.A.; Davis, T. 9496
Rubus pergratus Blanch., (1951) Davis, H.A.; Davis, T. 9480
Rubus roibaccus (Bailey) Rydb., (1949) Davis, H.A.; Davis, T. 8882

Spiraea alba Du Roi var. *latifolia* (Aiton) Dippel, (1993) Haywood, M.J. 102
 **Spiraea japonica* L. f., (1998) Grund, S.P. 2056; Japan
Waldsteinia fragarioides (Michx.) Tratt., (1895) Guttenberg, G.

RUBIACEAE

Diodia teres Walt., (1951) Henry, L.K.; Beer, F.H.
Galium aparine L., (1996) Isaac, B.L.; Isaac, J.A. 8872
Galium asprellum Michx., (1984) Thompson, S.A.; Nishida, J.H. 2031
Galium circaeans Michx. var. *circaeans*, (2003) Isaac, J.A.; Isaac, B.L.; Isaac, H.R. 16102
Galium circaeans Michx. var. *hypomalacum* Fern., (1950) Henry, L.K.; Buker, W.E.
Galium concinnum Torr. & Gray, (1966) Buker, W.E.
Galium lanceolatum Torr., (1921) Jennings, O.E.
 **Galium mollugo* L., (2003) Isaac, J.A.; Coxé, R. 16284; Eurasia
Galium pilosum Aiton, (1951) Henry, L.K.; Beer, F.H.
Galium tinctorum (L.) Scop., Donley 151
Galium triflorum Michx., (2003) Isaac, J.A. 16012
 **Galium verum* L., (1921) Dickey, S.S.; Eurasia
Houstonia caerulea L., (1996) Isaac, B.L.; Isaac, J.A. 8897
Houstonia canadensis Willd. ex Roemer & J.A. Schultes, (1921) Dickey, S.S.
Mitchella repens L., (1970) Buker, W.E.; Henry, L.K.

SALICACEAE

Populus grandidentata Michx., (1974) Buker, W.E.
Salix caroliniana Michx., (1951) Henry, L.K.; Beer, F.H. **GS 51**
Salix discolor Muhl., (1985) Thompson, S.A.; Nishida, J.H. 2253
Salix eriocephala Michx., (2003) Isaac, J.A.; Isaac, B.L.; Morton, C.M. 15794
Salix exigua Nutt., (1995) Isaac, B.L.; Isaac, J.A. 7122
Salix nigra Marsh., (1952) Henry, L.K.; Buker, W.E.
Salix sericea Marsh., (1955) Henry, L.K.; Buker, W.E.

SAXIFRAGACEAE

Chrysosplenium americanum Schwein. ex Hook., (2003) Isaac, J.A. 15903
Heuchera americana L., (1995) Isaac, B.L.; Isaac, J.A. 7118
Mitella diphylla L., (2003) Isaac, J.A.; Isaac, B.L. 15859
Saxifraga virginensis Michx., (2003) Isaac, J.A.; Isaac, B.L.; Morton, C.M. 15816

Tiarella cordifolia L., (1996) Isaac, B.L.; Isaac, J.A. 8895

SCROPHULARIACEAE

Agalinis tenuifolia (Vahl) Raf., (1969) Buker, W.E.

**Antirrhinum majus* L., (1896) Hoge, M.K.; Europe
Aureolaria flava (L.) Farw. var. *flava*, (1975) Buker, W.E.

Aureolaria laevigata (Raf.) Raf., (1993) Haywood, M.J. 97

Aureolaria virginica (L.) Pennell, (1969) Buker, W.E.

**Chaenorhinum minus* (L.) Lange, (2003) Isaac, J.A. 16138; Europe

Collinsia verna Nutt., (2003) Isaac, J.A.; Isaac, B.L. 15850

Gratiola neglecta Torr., (2003) Isaac, J.A. 16397

**Linaria vulgaris* P. Mill., (1974) Buker, W.E.; Eurasia

Lindernia dubia (L.) Pennell var. *dubia*, (1974) Buker, W.E.

Mimulus alatus Aiton, (2003) Isaac, J.A. 16587

Mimulus ringens L., (1951) Henry, L.K.; Beer, F.H.

Pedicularis canadensis L., (1995) Isaac, B.L.; Isaac, J.A. 7166

Penstemon digitalis Nutt. ex Sims, (2003) Isaac, J.A.; Cox, R. 16288

Penstemon laevigatus Aiton, (2002) Isaac, J.A.; Takacs, M. 14399; **GS:53**

Scrophularia marilandica L., (1984) Thompson, S.A.; Nishida, J.H.; Bier, C.W. 1973

**Verbascum blattaria* L., (1995) Isaac, B.L.; Isaac, J.A. 7504; Eurasia

**Verbascum thapsus* L., (1995) Isaac, B.L.; Isaac, J.A. 7540; Eurasia

Veronica americana Schwein. ex Benth., (2002) Isaac, J.A.; Takacs, M. 14403

Veronica anagallis-aquatica L., (1996) Haywood, M.J. 627

**Veronica arvensis* L., (2003) Isaac, J.A. 15867; Eurasia

**Veronica hederifolia* L., (2003) Isaac, J.A. 15880; Eurasia

**Veronica officinalis* L., (1996) Isaac, B.L.; Isaac, J.A. 8881; Europe

**Veronica persic* Poir., (1920) Dickey, S.S.; Eurasia

**Veronica serpyllifolia* L., (1995) Isaac, B.L.; Isaac, J.A. 7177; Europe

SMILACACEAE

Smilax glauca Walt., (1951) Henry, L.K.; Beer, F.H.

Smilax herbacea L., (1993) Haywood, M.J. 327

Smilax rotundifolia L., (1995) Isaac, B.L.; Isaac, J.A. 7105

Smilax tamnoides L., (1970) Buker, W.E.

SOLANACEAE

**Datura stramonium* L., (1994) Isaac, J.A. 6015

**Nicandra physalodes* (L.) Gaertn., (1921) Jennings, O.E.; Jennings, G.K.; et al.; Peru

Physalis longifolia Nutt., (1951) Henry, L.K.; Beer, F.H.

Physalis pubescens L. var. *pubescens*, (1921) Jennings, O.E.

Solanum carolinense L., (1993) Haywood, M.J. 60

**Solanum nigrum* L., (2004) Isaac, J.A. 18556; Europe

STAPHYLEACEAE

Staphylea trifolia L., (2003) Isaac, J.A.; Isaac, B.L. 15834

THYMELAEACEAE

Dirca palustris L., (2002) Isaac, J.A.; Haibach, M. 14412

TILIACEAE

Tilia americana L. var. *americana*, (2003) Isaac, J.A. 16166

Tilia americana L. var. *heterophylla* (Vent.) Loud., (1951) Henry, L.K.; Beer, F.H.

TYPHACEAE

**Typha angustifolia* L., (2003) Isaac, J.A.; Cox, R. 16283; Exotic

Typha latifolia L., Donley 97

ULMACEAE

Celtis occidentalis L., (1921) Jennings, O.E.

Ulmus americana L., (1985) Thompson, S.A.; Nishida, J.H. 2293

Ulmus rubra Muhl., (2003) Isaac, J.A. 16026

URTICACEAE

Boehmeria cylindrica (L.) Sw., (2003) Isaac, J.A. 16362

Laportea canadensis (L.) Weddell, (2003) Isaac, J.A. 16319

Parietaria pensylvanica Muhl. ex Willd., (2003) Isaac, J.A. 16157

Pilea pumila (L.) Gray, (1993) Haywood, M.J. 142

Urtica dioica L. ssp. *gracilis* (Aiton) Seland., (2003) Isaac, J.A. 16320

VALERIANACEAE

Valeriana pauciflora Michx., (1992) Isaac, J.A. 3910

- Valerianella chenopodiifolia* (Pursh) DC., (1996) Isaac, B.L.; Isaac, J.A. 8855
- Valerianella radiata* (L.) Dufur, (1999) Haywood, M.J. 606
- VERBENACEAE**
- Phryma leptostachya* L., (2003) Isaac, J.A. 16408
- Verbena hastata* L., (1985) Thompson, S.A.; Rawlins, J.E. 12882
- Verbena urticifolia* L. var. *urticifolia* Perry & Fern., (1993) Haywood, M.J. 169
- VIOLACEAE**
- Hybanthus concolor* (T.F. Forst.) Spreng., (2003) Isaac, B.L.; Isaac, J.A. 15839
- Viola bicolor* Pursh, (1950) Henry, L.K.; Buker, W.E.
- Viola blanda* Willd., (1951) Henry, L.K.; Beer, F.H.
- Viola canadensis* L. var. *canadensis*, (1994) Haywood 422
- Viola cucullata* Aiton, (1996) Haywood, M.J. 432
- Viola hirsutula* Brainerd, (2003) Isaac, J.A.; Isaac, B.L. 15824
- Viola labradorica* Schrank, (1976) Buker, W.E.
- Viola pubescens* Aiton var. *scabriuscula* Schwein Ex Torr. & Gray, (2003) Isaac, J.A.; Isaac, B.L. 15846
- Viola sagittata* Aiton var. *sagittata*, (1993) Haywood 540
- Viola sororia* Willd., (2003) Isaac, J.A.; Isaac, B.L.; Morton, C.M. 15813
- Viola striata* Aiton, (1996) Isaac, B.L.; Isaac, J.A. 8901
- Viola x eclipes* H.E. Ballard, (1976) Buker, W.E.
- Viola x palmata* L. (pro.sp.), (1994) Haywood, M.J. 41
- VITACEAE**
- Parthenocissus quinquefolia* (L.) Planch., (1951) Henry, L.K.; Beer, F.H.
- Vitis aestivalis* Michx., (1995) Isaac, B.L.; Isaac, J.A. 7104
- Vitis cinerea* (Engelm.) Millard var. *baileyana* (Munson) Comeaux, (1995) Isaac, J.A. 6017;
- G4G5?:SH**
- Vitis labrusca* L., (1994) Isaac, J.A. 6024
- Vitis riparia* Michx., (1994) Isaac, J.A. 6026
- Vitis vulpina* L., (2003) Isaac, J.; Coxe, R.; Bradburn, M. 17222

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